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Architecture and Sculpture at Olympia.

PROFESSOR CURTIUS has recently delivered a lecture at the Berlin University on the Olympian Excavations, of the results of which accounts have, from time to time, been brought before our readers. We are inclined, however, to doubt how far the full import of the work carried on by the Germans at this centre of classic worship, since October, 1873, at the cost of 7,500*l.* per season, has been fully realised in this country. The addition made to our knowledge of ancient art is absolutely priceless. The excavations have thrown light upon the art history of a thousand years, including the "great" period of Greek art. They have afforded us authentic works from the hands of Praxiteles, Alcamenes, and Pæonius, sculptors whose names can only be preceded by that of Phidias.

The recovered temples on the Altis are not of one single type, like the Parthenon at Athens, but afford traces of a long and gradual development of architectural taste and science. In the ancient temple of Here are marks of the successive replacement of the original wooden columns by columns of stone, a group being completed on each occasion. It will be seen in a moment how interesting is such an observation, as showing historically that truth of the view at which architectural writers had arrived theoretically, namely, that the trabeate structure was not only an imitation of wooden constructions, but had a direct filiation with that mode of building. Again, Professor Curtius calls attention to the double flooring of the temple of Jupiter, which, with other peculiarities of that fane, gives evidence of successive stages in the history of architecture. This temple is described by Pausanias, who also tells us of the colossal scale of an altar reared to Zeus, of which the lower platform, called the prothysis, had a circumference of 125 ft. On this was a mass composed of the ashes of the victims that had been offered; the total height being 22 ft. Nor are religious buildings alone illustrated. Town-halls, council-halls, treasure-houses, gymnasiums, porticos, vestibules, terraces, a stadium, roads, and water-courses have been recovered; and the impression of living Greece given to the visitor is not less powerful than is that which is conveyed to the visitor to Pompeii of the ardent life of Campania Felix 1800 years ago. Without thinking it necessary to repeat the somewhat depreciatory remark of Professor Curtius as to the result of labours at Ephesus, at Halicarnassus, at Troy, and at Mycenæ, we may echo and applaud him when he says, "At Olympia we have succeeded, by patient and progressive toil, in discovering one of the ancient world's most famous spots, with its glories of ancient art. So that we may hope to be able, at the end of next year, to say, 'Here is the Altis of Olympia, with everything belonging to it, excepting a small portion of which the elements and the barbarians have deprived us.'"

Indeed, we may gratefully acknowledge that the present century, we may say the present quarter of a century, has effected, and promises yet to effect, as much for ancient art as it has done for ancient history. Research into art goes hand in hand with research into literature. The explorer works *pari passu* with the student. Here we recover from beneath the sands of Egypt, or the alluvial deposits of the Alphæus, monuments that tell their own tale. There Birch, Oppert, Brugsch, Sayce, Smith, and Pinches shed the light of intelligence on hieroglyphic and cuneiform inscriptions that have long presented their mute and uncomprehended symbols to the visitors of our museums. At Olympia we find not only marbles and terra-cotta, but discover that a calcareous marl was much employed by the sculptor before marble came into general use. This material was adapted to a coating of colour; and we thus have fresh evidence as to the polychromatic decoration of ancient architecture and sculpture.

Among the treasures placed at the head of the list of discoveries by Professor Curtius are the metopes of the Temple of Jupiter. There were, as we learn from Pausanias, twelve. Four of them were discovered by the French Expedition in 1829. They represent Hercules and the Nemean lion, Hercules and Geryon, Hercules and the Cretan bull, and a nymph or goddess seated on a rock. These are in the Louvre. To these are now added Hercules supporting the heavens, while Atlas rests from the task; King Eurystheus and the Erymantian boar, the figure of Hercules being wanting in the metope; and Athene standing. Professor Curtius agrees with English students in ascribing the workmanship of the latest-discovered metopes to a severe Peloponnesian school, which had not yet attained to the full breadth and grandeur of Phidias. The name of Alcamenes is connected with this school. The two pediments were committed,—the one to Alcamenes, the other to Pæonius; being respectively on the western and the eastern façades of the temple. Pausanias records that the subject of the sculptures in the eastern pediment is conceived at the moment immediately preceding the contest between Pelops and Œnomaus, and the preparation on both sides for the race. In the centre of the pediment was the statue of Zeus. On the right of the god stood Œnomaus, in a helmet, his wife, his charioteer, his four horses, and two attendants, while the reclining figure of the river god Cladeus occupied the lower angle of the pediment. On the left of Zeus stood Pelops and Hippodameia, a charioteer, horses, and attendants, while the Alphæus reclined in the angle. The colossal torso of the statue of Zeus has been recovered, and is now at Berlin. The torsos of the two heroes; a draped female statue, which was found on the first year of the excavation, and which is now identified as that of Hippodameia; the bodies and heads of three of the horses of Pelops; six kneeling or crouching figures, which might be charioteers and attendants; and the torsos of the two river gods, have been recovered, and are arranged in a pediment at Berlin. One of the kneeling figures is a female, not mentioned by Pausanias. The number of the torsos found corresponds with that mentioned by this writer; but we are yet far from having attained a satisfactory reconstruction of the groups.

The western pediment was entrusted to Alcamenes. The group is not so fully described by Pausanias as was that of the eastern pediment; but he tells us that the subject was the favourite theme of the struggle between the Lapithæ and the Centaurs, at the bridal feast of Pirithous. A colossal male statue occupied the centre of the pediment, which the discoverers regard as that of Apollo, holding the position given to Zeus in the eastern pediment, although the presence of that deity is not mentioned by Pausanias. This central figure extends his arm towards a Centaur, who is seizing a woman (no doubt the bride Deidameia), who is supported on the left by a male figure, supposed to represent Pirithous. On the right of the central figure is a balancing group of a Centaur, a woman, and a man, of whom only one foot is yet recovered. Next comes a Centaur carrying off a boy, and another Centaur, from whom a woman is trying to escape, who is stabbed in the breast by her defender. This is the best preserved of all the figures. There are two reclining female figures, probably nymphs or river goddesses, disposed as were the river gods on the pediment of Pæonius.

We cannot avoid expressing the opinion that much of the criticism which has been offered respecting this grand recovery from the tomb of the past bears the mark of an inspection of the figures under circumstances quite different from those provided by the sculptor for their exhibition. Where the painter has two media of expression,—definite form and colour obedient to the will,—the sculptor has but one. And even of that one he has only a transient and slippery grasp. The one phenomenon by which the sculptor appeals to the eye of the spectator is shadow. To produce this, two things are required,—the chisel and the sunbeam. As the incidence of the latter varies, so does the effect of the sculpture. This is true as to sculpture in the round; but it is even more signally true as to *alti rilievi*, especially when they are of heroic size, placed within definite architectural lines, and commanding the eye of the gazer from a considerable height. The effect of foreshortening is combined with that of shadow; and no one who has himself attempted sculpture, even on a small scale, will fail to agree with us in the remark that a certain rudeness and roughness of touch is an essential requisite

for effect in a statue seen from a proportionally considerable distance, and under the light of heaven. It was not economy of labour on the part of the artist, but subtle mastery of the rules of his art, which led him, we will not say to omit, but carefully to avoid, that finish which, delightful as it is in a piece of chamber sculpture, tends more than even marked defects of handling to reduce a work such as we are speaking of to insignificance. As matter of execution, there is much in these *rilievi* of which it is easy to speak as imperfect, but the true meaning of which can only be grasped by those who could see the figure at the same angle of position, and under the same angle of illumination, as that contemplated by the sculptor who wrought them. As to the daring originality of the invention, but one opinion has been expressed.

Two elements for comparison exist, which, we think, tend very strongly to support the above view. One of these is the admitted difference in style between the eastern and the western pediment. The other is the yet more marked difference between the treatment of the winged statue of Victory by Pæonius, which is mentioned by Pausanias, and the recovery of which was one of the first triumphs of the explorers, and that of the figures on the eastern pediment, for which the same artist was responsible. The Victory was a figure in the round, which stood on a triangular base of marble at the height of about 19 ft. Deducting the height of the spectator, the proper stand-point from which to view the Victory best would therefore be at a distance of about 40 ft. if the figure were life-size, and more in proportion to any excess of scale. The columns of the Temple of Zeus were 34 ft. 4 in. high, and, allowing for the entablature, the point of nearest view must have been at least three times as distant from the figure as in the case of the statue of Victory. In fact, as far as we can judge from the plan, a distance of 120 ft. on the horizontal line, and, allowing for the difference of level indicated by the steps, 135 ft. on the line of vision, must have separated the nearest point of view from the face of the pediment, and the eyes must have been directed upwards at a considerable angle to observe the figures with attention. To give the same style of finish to sculpture intended to be seen from such different distances was not what a sculptor of the age of Phidias would for a moment have dreamed of doing. Not, we cannot too strongly reiterate, that there was any approach to what we call scamping work that cannot be too closely inspected. But that finish of surface ought to be a function of distance of stand-point, and that it was so regarded by the masters of the art of sculpture we think is undeniable.

Again, no one can have lived in Greek or Italian localities for years,—or we might almost say for months,—without becoming instinctively aware of the extraordinary difference of the illumination of the eastern and western façades of a building in those climates. It is true that in an edifice standing so fairly north and south as did the Temple of Olympia Jupiter, the rays of the morning sun would strike the eastern pediment at angles equal to those subtended by the setting sunbeams on the western. But festal life, among the Mediterranean people, rarely commences before noon. During the whole time that the great masses of worshippers or sight-seers were sauntering and chatting through the streets of Olympia, the figures of Alcamenes would be illuminated by direct rays of sunshine, while those of Pæonius would only be seen by a diffused light. We do not venture to hint by what rule the treatment proper for each effect should be guided; but we cannot doubt that the rules are different in the two cases, and that, whether from instinct or from methodised observation, a corresponding difference of treatment was adopted by the two great sculptors in question. Thus the difference in treatment which is noted between the Victory of Pæonius and the pedimental group is, to our minds, a proof not of the inferiority of the workmanship of the latter, but of their perfect adaptation to the conditions under which they would be usually seen. Then, again, the likeness in the treatment of the two pediments would be, as is actually the case, more striking than the difference, although there would have been reason for the adoption of some difference, even if both were the work of the same sculptor.

While, then, we are not prepared to hold, with Professor Brunn, that the Thracian origin of the style of Pæonius, and the Lemnian origin of that of Alcamenes, each transmuted by the influence of Phidias, may be distinctly inferred from the pedimental remains, as far as they are yet discovered and arranged, and while we may admit, with a learned English writer, that the subordinate details of these *rilievi* may have been wrought out by "prentice hands" under the direction of the great sculptors named, we cannot but feel that the only spirit in which the undoubted works of Pæonius and of Alcamenes can be rightly regarded by us is that of the learner. It is not, we humbly think, for the residents in a city which has illustrated its perception of the elementary principles that should regulate the work of the sculptor by its location of the equestrian statue of the Duke of Wellington, to propose to criticise an outcome of the grand period of Greek art. If we fail to be struck by the handiwork of men of such lofty genius, we may be well assured that the fault lies, not in them, but in ourselves.

Even more precious than the works from the chisels of Pæonius and of Alcamenes are the remains of the Hermes of Praxiteles. This artist may be said to have occupied a position in relation to Phidias somewhat resembling that borne by Correggio to Raffaelle. And there is a special interest attaching to anything that can be directly traced, as in this case, to Praxiteles himself. It is to Polydorus that the figure called, from its perfect proportions, the Canon, is attributed. The more minute and careful are our actual admeasurements of any undoubted work of the great Grecian sculptors, the more exact do we find their proportions,—exact not to inches, but hundredths of inches. Now, the Apollo Sauroctonos, as it is called, of which not a few repetitions exist, is usually attributed to Praxiteles. In this figure, however, the vertical proportion of the head and neck is disproportionately great, as compared to the canon. In eight of the masterpieces of Greek art, the vertical distance from the fontanel, or little pit at the base of the throat, to the top of the head, varies only from 151 to 161 nine hundred and sixtieth parts of the whole height of the figure. The theoretic measurement of the canon is 160 nine hundred and sixtieth parts. In the Sauroctonos this distance is 201 nine hundred and sixtieth parts. When attention is given to this definite statement, it will be readily observed that there is an awkwardness in this part of the figure. And we cannot doubt that, if the original were by Praxiteles himself, the copies which have reached us have come from the chisel of some of those Roman copyists in whose work the mathematical accuracy of the Greek masters is, as far as our own measurements go, invariably absent.

The legs and part of the right arm of the Hermes are gone. Of the infant Bacchus whom he bore in his arms, little remains but the lower part of the body. But the head, the face, and the rest of the body of the Hermes are in excellent preservation. The hair is treated with less elaboration of finish than the flesh. But as to this, we must again point out that the particular light in which the statue was to be seen was, no doubt, the circumstance that determined this mode of treatment. Our readers may have observed, that when a mask of Apollo, which has two little half curls of hair on the forehead, was shifted from one position in the British Museum to another, the effect was wonderfully changed. In the true light, the little straying curls gave at once life and character to the face. In a light not suited to the sculpture, they were unmeaning prominences left in the marble.

We must express a hope that the English public may soon be presented with some reproductions of these priceless treasures of art in an accessible form. We conclude that the Berlin Photographic Company, which is entitled to such gratitude from all lovers of art for the faithful reproduction, as far as the camera can render it, of so many of the masterpieces of ancient and modern art, in sculpture as well as in painting, will not delay to publish photographs of what is already at Berlin. We have only to express a hope that competent judgment may direct the illumination of the sculptures at the moment when they are photographed. And we shall be glad of an early opportunity of ascertaining how far the natural eagerness of the English lovers of sculpture has been thought of by the German explorers to whom the world owes so much. Professor Curtius is entitled to the thanks of all lovers of art, and of all students of Grecian history, poetry, and drama.

GOVERNMENT ENCOURAGEMENT OF PAINTING AND SCULPTURE.

In our previous article on this subject,* by means of extracts from the Parliamentary Reports of that time, we rehearsed the subjects for painting and sculpture which were selected and set forth by the Royal Commission for the Encouragement of the Fine Arts in the rebuilding of the Houses of Parliament during the somewhat more than twenty-one years of its existence, namely, from its appointment in November, 1841, in the fifth year of her Majesty's reign, until March 11th, 1863, the date of its final report.

The sentence from this document which we printed in italics, indicated the virtual collapse at that date of the action of the Committee for Encouraging Fine Art, and the consequent discontinuance of the scheme for its employment, originated, promoted, and supported by the Prince Consort, and thus terminated, but little more than one year after the fatal December of 1861, which deprived us of his wise counsels and zeal for art.

Within those twenty-one years, under his auspices, some very good work was done in the Houses of Parliament by our painters and sculptors, and gladly should we turn to speak of them in detail, but that our present theme is to direct attention to the withdrawal since of by far the larger portion of the promises of employment held out for fine art in its higher departments.

As may be seen by the lists quoted in our foregoing article, the number of subjects selected and recommended to be executed for the interior decoration of the Houses, and as such published, during the existence of the Commission, amounted to not less than 150 for painting and 130 for sculpture. In perusing these we may acknowledge that, while affording excellent illustrations of our national history, they also offer most worthy opportunities for the enhancement of our Houses of Administration and for the employment of our artists. That the selection was judicious might well be expected from the distinguished men by whom it was made; but what followed was scarcely to be augured, namely, that so few of these subjects for fine art so chosen and recommended were eventually to be carried into effect. No sooner, indeed, were we deprived of the good Prince than his traditions seem to have been lost sight of by those who remained or have followed him; nor has there been any one, as the late Mr. Edward Barry so well said in one of his late lectures, "to take up the task that only dropped from the hand of death."

In another paragraph, in the same eloquent discourse in which this expression occurs, the late Professor of Architecture of the Royal Academy thus continues. In pointing out the contrast existing between the encouragement of the fine arts in France and England, "I referred," he says, "last year to the French Fine Art Budget, which included a vote of 200,000*l.* for purposes connected with art. Of this amount no less than 30,000*l.* were to be devoted to the purchase of pictures and sculpture designed to decorate the public edifices, while 60,000*l.* were to be expended in the preservation of public monuments, and 18,000*l.* were appropriated to the French Academy at Rome, and the National School of Fine Arts."

It is with the above 30,000*l.*, set apart by the French Government for the purchase of paintings and sculpture designed to decorate the public edifices of France that we may well compare the nothing whatever devoted by our own Government at the same time to similar objects; and yet this country has been wholly free from dislocating disasters, such as those which overtook France but a few years ago.

And what sufficing reply can be made to the representation of this contrast? Officials may look benignly bland, and respond that "Government in this country does not do these things, it leaves them to the people." But Government at one period, during Prince Albert's time, did these things, and they bore a good harvest, and the question remains, why does not Government do so again? At present Government educates in art, but most paradoxically she does nothing at all for art except in its embryo state. The grub is cared for, but the butterfly is left to perish.

France does not act thus, for while she

* See p. 163, *ante*.

applies 18,000*l.* to education in art, at the same time she sets aside 30,000*l.* for the employment of matured art, by the purchase of pictures and sculpture for the nation; that is to say, two-fifths more for the substantial employment of art than for education in it.

The fact manifests itself, indeed, that there is more interest with the authorities to make and support a department for art than to encourage art itself, pure and simple. There is a substantial annual grant passed through Parliament every year for purposes of education in art; and we have museums and schools of art of which we have no reason to be ashamed. They are, it is to be hoped, bearing good fruit, and we should prefer to see the sum applied to their maintenance increased rather than diminished, but we should like to see at the same time at least an equal sum applied to obtaining results from this national expenditure in education, in obtaining paintings and sculpture, for our public edifices and public places, after the same mode of procedure as is directed to this subject in France, where national pictures and statues are found not only in Paris, but in provincial towns to a much greater extent than here.

As regards the present state of our Governmental care for fine art, we have no hesitation in calling it eminently half-hearted, and venture to affirm, not only that it is unreasonable and unworthy of us, but that it is in degree even mischievous.

Let us view the not unfrequent career of the student in our Government art schools. Commencing at the lowest elementary step, he, with pains and care, and many months' labour, climbs, round after round, up the ladder of study until he arrives at the top, to find at last that it is nothing but a ladder, and leads to nothing! It is not as if this staircase led to a level whence fair prospects were to be seen over fields of employment. But, on the contrary, he discovers himself to be only in a most insecure and forlorn position, with nothing to support him, and nothing to do.

He may, indeed, have a chance of a mastership in the provinces, where he may assist others in the same doubtful course he himself has trodden; but this is not the kind of result that the ingenuous lover of art sets before himself in the prosecution of his studies. If his ambition be of the nature of the true artist, he will hope by means of them to reach the assurance of exercising the abilities he has had the opportunities and industry to cultivate. But the Government here does not afford him any chance of so doing; but having, by the facilities it gives, courted and incited him to his expedition in the realms of art, eventually deserts him altogether and leaves him out in the cold to shift for himself.

Nothing can be further from our desire than, in any degree, to disparage an art educational department; but the above words will meet the eyes of not a few who, either in their own persons, or in respect to those dear to them, will endorse their truth. It is not the education in art that is to blame, although its fascinations should not be unduly enhanced, but it is the omission of that which should come after education which is to be condemned; in which respect we have ventured to apply emphatically the term half-hearted to the treatment the subject at present receives at the hands of the British administration.

It is a frequent critical comment on our exhibitions of art that our school lacks vigour, and epic qualities, and grandeur; and that our pictures only excel in that class which has received the name of "genre." But it is this latter class of pictures which finds the readiest sale among the rich men of manufacture and commerce, who are the chief patrons at the present day. They do not desire for their homes historic and epic works such as would be proper for the embellishment of public and national edifices, and therefore such subjects are not painted; for supply responds but to demand. If, therefore, it must be acknowledged that our school is deficient in these respects, the fault rests, not with the artists, but with the Government and municipal authorities, who do not afford them opportunities similar to those which they receive in other countries. On the other hand, let there be a grant every year for mature and educated art, equal to that applied to the education for it, and then the action of Government will be logical and whole-hearted instead of being paradoxical and unreasonable, and the nation will obtain something more definite than it can produce now, to show for the outlay on Government schools of art-education, which should only be the stepping-stone to worthy art production.

In order to obtain the best results also this encouragement should not be given at fanciful amounts to one or two favoured persons, but should be distributed judiciously among the deserving. It is at no time a sign of health in art that wholly disproportionate remuneration should be heaped upon one or two individuals, and that others, of at least nearly equal abilities and merit, should have to subsist on a pittance. Thus, it should not be one or two, but a dozen or two artists who should be employed at reasonable rates, so that they may live, not lavishly but modestly, as artists should live, and paint pictures and sculpture statues for our public edifices and public places; and return to the public, in worthy works, the value of the sums that have been applied to their education.

That vagueness may not be alleged as a charge against our suggestions, we will submit two examples of situations where the enhancements of painting and sculpture would be appropriate and welcome to the nation. For instance, the walls of Westminster Hall for paintings, and the vacant pedestals on the Thames Embankment for sculpture.

The history of the Hall itself is fruitful in subjects, and its walls might at least in part not unsuitably reproduce in art some of the striking events which have taken place within them. These might well occupy situations between the perpendiculars, produced downwards, of the hammer-beams above, which would indicate ten well-proportioned spaces for frescoes or other paintings on the south side, and an equal number on the north, whenever the law courts are removed from their present location to the new home of litigation now being completed at the eastern termination of the Strand, and when the present doorways at the north side might be abolished. When this is effected, no nobler situations can well be conceived for historical subjects treated by the painter's art than the twenty spaces which would then be afforded by this magnificent and venerable hall.

Among the subjects which would have the above-mentioned special interest of having been there enacted, we will specify a few that might well be depicted. An early trial by jury might well find a place there as one of these, and, if we recollect aright, one of the most successful cartoons in the competition of many years ago, within the same walls, excellently represented such an event. The meeting of one of the early Parliaments, also, which assembled here, might well suggest another subject. The next that occurs to us is one of which we have little cause to be proud, namely, the trial of the valorous Sir William Wallace in 1305, and, in more than 200 years afterwards, that of Sir Thomas More. Here, in 1517, did bluff King Hal, with Wolsey by his side, pardon the riotous city apprentices implicated in the atrocities of "evil May-day," on which occasion they appeared before the king with halters round their necks. Here, within these ancient walls, was the great Earl of Strafford condemned in 1641, the king himself being present; and here again, in 1649, as if in retribution, was he himself, Charles I, arraigned and brought before the High Court of Justice in his fatal trial, on which occasion the upper part of the Hall was hung with scarlet cloth, as if in mockery of him who sat under it, with the banners taken at the battle of Naseby suspended over his head. Here, in the reign of James II., in 1688, the seven bishops were acquitted. Here, in 1745, the rebel Lords Kilmarnock, Balmarino, and Lovat were tried and condemned. Here Warren Hastings was tried, 1788-95, and Burke and Sheridan pleaded, while the beauty and rank of England sat earnest spectators and listeners. Then, nearer our own times, in 1820, was the festivity held on the occasion of the coronation of George IV., when, probably for the last time, was the old custom honoured by observance, in that the king's champion (Dymocke) rode into the Hall on his charger in full armour, and threw down his gauntlet of challenge to all traitors.

The above being all events which actually took place within the very walls of Westminster Hall, claim, perhaps, the first consideration, but beyond their range there may be other subjects equally suitable for treatment there. We cannot, however, quit this part of our theme without allusion to two more events which also took place within these aged walls and which claim our notice as partaking largely of the irony of fate, and the startling effect of contrast. Here, in the year 1657, at the upper end of the Hall, was Oliver Cromwell inaugurated as Lord Protector, with a gold sceptre in one hand, and a Bible in the other, and his sword at his side; and four years later, on the same spot, was his head set on a pole, with the skull of Ireton on the one side, and that of Bradshaw on the other.

With this example of our magnificent national Hall, which has nothing now but bare walls to contrast with the fine roof overhead, and which affords such fine spaces for historic frescoes, we leave the subject of painting for that of the sister muse of sculpture, which also must be attractive to an English public, if we may judge by the continuous crowds on holidays which assemble around the *rilievi* and groups of the Albert Memorial.

We shall not have to go far from our ancient Hall of Westminster to find a situation for native works of sculpture; for close to it commences the range of many vacant pedestals along the Thames Embankment, which were evidently designed for the reception of statues and groups, but none of which have as yet arrived. On the masonry of this magnificent boulevard many fine situations have been provided, but not one of them is as yet occupied. It seems almost a mockery at art that this manifest shortcoming should continue to exist year after year, and perhaps in no other country but in England would it have been exhibited.

Many subjects occur which might worthily, and with interest to the public, occupy these situations, and, among them might be groups representing the various colonies of Great Britain which send their ships into our river Thames. These works might be so composed as to present satisfactory fronts, not only to the road and footways, but to the river. If, also, marble or bronze were too expensive, terra cotta would lend its economic aid, and be equally lasting, and we have manufactories on the very banks of the Thames that could readily transfer to this enduring material the models of the many clever sculptors, especially of the rising generation, which we possess.

In respect to fine art generally, some small "fraction of the cost of an ironclad" would set both these undertakings of worthy national fine art going to the satisfaction of the public. But the Government is not yet awake to do it, and we fear a good many alarums will be requisite before she does awake from her slumber. And yet she is awake in respect to education in art, because there are energetic persons who will not let her shut her eyes to that; but there is no one to do this in respect to matured art, and thus, although the seed is sown, there is no sun to ripen the harvest.

It is quite true that schools of design and museums of art were not established solely for the production of fine art, but also for the improvement of industrial art,—of art applied to manufacture; but even in this view of the question, the whole subject demands to be encouraged from above as well as from below. If this broader and more just view of art were acted on, instead of the present more contracted one, not only would the higher branches of art benefit by it, and the nation have something more substantial than she has at present to show for her expenditure, but every branch of ornamental design would be inspired, and gain force and power, by the association with, and sight of, great works of fine art growing up around the designer and workman.

Art is all one subject, and a design for lace, silk, cotton, metal-work, or pottery, has a relationship with the finest treatment of painting and sculpture, and the whole subject should be considered in its catholic and congenial unity by the advisers of the nation. Government should not rest content with establishments which educate to the level of manufacture, but should also afford substantial means to recompense the highest achievements of the more lofty and cultured branches of painting and sculpture; and this is what at present, as we have before pointed out and illustrated, France does, and England does not.

Enoch Station Hotel, Glasgow.—We are informed that at these buildings, recently illustrated in our pages, a large amount of the glazing done is on Mr. Rendle's patent system. The large porch seen in our view affords a special example of it.——Some letters with reference to the authorship of the design are reserved for consideration.

"THE MYSTERIES OF COLOUR."

To the list of professors who have lately treated of "the mysteries of colour," let us add the name of M. Charles Blanc, who has recently delivered two valuable lectures on the theory of colour, of practical value. The comprehension of these laws, which M. Charles Blanc was one of the first to lay intelligibly before the public in his "Grammaire des Arts du Dessin," is an absolute necessity for the decorator, who, when he has mastered them, will find his task considerably lightened; to the painter, naturally, such laws are of incalculable value, and to the architect an acquaintance with their mysteries is one of the many subjects which, to render himself competent, it is his duty to have at his fingers' ends. It is a theory commonly enunciated that drawing can be taught, but colour never; the theory of colour, in reality, can be taught as easily as the power of holding the pencil and training the eye to judge of proportion. The knowledge of the laws which regulate the contrast of colours will never mechanically produce great colourists any more than a knowledge of grammar can mechanically produce great orators or writers, but an acquaintance with these principles will enable us in each case to avoid falling into error. Genius has the strange power of intuitively being acquainted with these laws, and hence it is that though the laws of colour have only been laid down within a generation or so, the past which ignored them (as written down) has produced colourists whose fame can scarcely be equalled. In the laws of form and colour this distinction may be drawn: that while form is absolute, colour is never so; the effect of light changes colour, a cube can never look round in any light, but a rose placed between two purple dahlias will appear of a grayish hue. Diderot, the great critic of the last century, the father of modern art-criticism, has laid it down that colour gives life, but do we not see in the statues of Greece a life which is in no way enhanced by colour? That the science of colour,—to return to the first proposition,—can be taught, is proved by the fact that in the history of painting there are schools which are famous for their power of colouring,—the Flemish and the Venetian, for instance; while in the East the sense of colour is apparently instinctive, though in reality it is the result of a profound knowledge of its laws. The laws of colour can be learnt, as M. Charles Blanc warmly urged, in the same manner as one learns harmony or counterpoint at the Conservatoire. It was Newton who first enunciated the theory of the division of white light into seven primitive colours; it has, however, since been proved, and this is an important fact to remember, that indigo must be considered as merely a derivative of blue; the prism, therefore, can be now reduced to *six primitive colours*, —red, orange, yellow, green, blue, and violet. Of these, three are incomposable, red, blue, and yellow. M. Chevreul passes as having been the first to reduce to scientific formulæ the laws of colour; M. Blanc has, however, discovered, after numerous researches, a rare document which proves that M. Charles Bourgeois, as far back as 1812, laid before the French Academy of Sciences a memoir in which he attacked Newton's seven-coloured prism theory. The reception his views met with was far from encouraging, but posterity has been more far-seeing, and Charles Bourgeois must be looked upon as the discoverer of the laws of "complementary colours." Let us endeavour to explain what "complementary colours" are. Given that the union of red, blue, and yellow,—the three incomposable colours,—produces white, a fact proved by the division in this manner in the prism of the white sunlight, if we take any one of these, say yellow, what remains to make up white? Red and blue. Now red and blue form violet; violet, therefore, is the complementary colour to yellow, that which completes with it a union forming white. In simple words, the complementary colour to any other colour is its direct opposite; green is the complement to red, and, naturally, *vice-versâ*; as a further fact, we may notice that the complementary colours are respectively to each other warm and cold; red is warm, its complement, green, is cold. Note this fact that in red, taken as an example, there exists not a trace of green; in green not a trace of red. With this fact well understood, let us see the application of the theory. The complementary colours possess properties the knowledge of the use of which is invaluable. Foremost among these is the fact that the juxtaposition of two complementary colours heightens the power of each colour. Place a piece of violet cloth or other substance beside a piece of yellow cloth, and each will set off the other to greater advantage. Mingled, however, these colours produce white,—in theory that is, for we can never succeed in obtaining colours pure enough to obtain this result in fact; the mixture of two complementary colours produces achromatism, "no colour." Another strange fact, "a mystery," connected with the complementary colours was discovered by M. Chevreul. M. Chevreul, it may be known, was long professor at the tapestry works of the Gobelins, and there he delivered, but almost unnoticed, a series of lectures on his theories which are now received universally by the scientific and artistic world; but these lectures, which were published, expounded his theories in language which could be understood only by a professional audience,—a fault which was increased in the English translation which appeared some time ago. M. Charles Blanc was the first to reduce the theories of M. Chevreul to an intelligible form, and to the pages of his "Grammar" readers desirous to enter more fully into the subject may be referred. But to return. M. Chevreul discovered another strange property connected with the complementary colours. If you place a bright red wafer on a piece of white paper, you will perceive round it a green circle or halo, and the more steadily you examine the wafer the more apparent will be this green ring. The same fact is noticeable with all the complementary colours. Chevreul has called this "simultaneous contrast"; the eye has created the complementary colour,—a fact which proves the correctness of the theory of complementary colours. If after looking for some time at a sheet of pink or red paper you glance at other objects, everything appears green: this is the same experiment as that of the wafer,—the eye has created the complementary colour.

M. Blanc at this point related an anecdote of some interest, which had been told him by the painter Delacroix. In 1832, Delacroix, who was at work at his famous "Sardanapale," was sorely tried by the difficulty of making a piece of yellow drapery in the foreground sufficiently bright, and in his perplexity he had ordered a cabriolet to drive him to the Louvre, to study the old masters. Standing at the door of his house in the Rue Notre Dame des Champs, the cabriolet, which was of a bright canary yellow, struck the attention of Delacroix, who, studying the effects of yellow, plainly observed round this glaring patch a halo of violet. Needless to say, his excitement at this discovery was immense. The cab was dismissed; he rushed up to his painting-room and dashed in round his piece of yellow drapery a quantity of violet-colour, and his effect was obtained. In the same year, Goethe, whose studies on colour are familiar to all students, remarked, during a walk with his friend Ekermann (in whose conversation with the great writer the fact is noted) how round a bed of yellow crocusses there was plainly observable a halo of violet light. Chevreul's theories first appeared about 1833, when Delacroix told the anecdote above related to M. Blanc.

The direct effect of acquaintance with these laws it is easy to put into practice. If you are a painter you have in some portion of your picture too large a proportion of, say, yellow. By a knowledge of the laws of complementary colour you proceed to nullify the effect of your yellow by putting over it the amount of violet which obtains the effect your eye has taught you to appreciate. If you are a housekeeper you find the hangings of your room faded, you skilfully place next them a mass of their complementary or opposite colour. Into the theory of the formation of the different tones of each colour our space forbids us to enter. Suffice it to say that these tones are only the excess which remains over after the mingling of two other colours. In explanation, we shall have to speak of the relative and differing "value" of the various colours, the superior strength of some over others. M. Blanc told another anecdote of the great colourist, Delacroix, who once met him when discussing with a professional friend the power of colour,—Delacroix having heard from Charles Blanc that his theory was that the true colourist did not make use alone of "local colour" to represent an object, but arrived at his result by the power of contrast. Delacroix agreed thoroughly, and, pointing to the pavement, said, "Such was the power of Paul Veronese in the management of colour that he felt sure that, had he wished, he could by contrast have made that dirty grey look white,"—an artistic exaggeration, doubtless, but approaching truth.

The knowledge of the laws of complementary colours is, let us repeat, absolutely necessary to the professional man; it will be of great utility to the mere outsider, and with the decorator who uses so largely flat tints, an acquaintance with the few simple laws which regulate colour is invaluable. Until within a few years the artistic world has been entirely ignorant of all these laws. It has been an invariable custom, for instance, among painters, when there has been too large a mass of red in their pictures, to place by its side a mass of blue. A knowledge of the modern laws of colour shows the painter that such a process is incapable of obtaining the effect desired.

Let us now inquire into the effect of black and of white on colour, black and white being "no colours." When an effect is too brilliant, the introduction of black has an immediate effect in reducing this brilliancy. The eye, like the body, requires repose; repose for it is a necessity. The use, therefore, of black is a valuable aid to the decorator. The further facts connected with the effect of black and white on colours belong to M. Charles Blanc entirely, and as such it may not be uninteresting to examine them. Briefly stated, they may be thus laid down,—that coloured objects on a black background show their colour more than their form; on a white background, their form more than their colour. If you are a colourist, you will prefer black background; if you are a draughtsman, white background. A lady's face wrapped in a black mantilla will show more its tint than its form; the same face in a white mantilla will show more its form than its tint. But these facts are merely observations; they assume none of the absolute nature of the laws of colour. Let us now look into another of the mysteries of colour, what in the French nomenclature is termed the "*mélange optique*," and what we may call the "optical confusion of colours." At a distance an object may, by this law, appear to be of a colour which in reality does not exist in it. This is an experiment which may be tried by placing a number of narrow strips or bands of light red and light green side by side; at a distance these will be blended together by the eye, and the whole will appear of a grey tint. This is the phenomenon of the optical confusion of the eye.

Yet another anecdote of Delacroix. In the cupola of the library of the Luxembourg Palace, Delacroix has painted a scene in which are represented the great personages of antiquity; an important figure in the composition, the Aspasia, appears to the beholder in all the freshness and beauty of radiant youth. While this figure was being painted, Delacroix, whose age made it far from easy for him to climb up to the scaffolding, told a pupil of his to take his brush and palette, on which the painter had mixed a quantity of dirty green, and with this colour slash over the whole of the nude portions of the Aspasia. Needless to say that the pupil carried out his master's directions, and to this day the huge cross bars of green would be seen by any one who could get close to the ceiling; but the effect of this is only to heighten the dazzling brilliancy of the flesh tints of the beautiful Aspasia.

In decoration, the colours must be used in full force and in flat tints (this is a theory which, it will be remembered, was urged by the late Owen Jones). In picture-painting, the tones employed are never flat, but are broken; the painter representing nature, and generally what is round, on a flat surface. We may see the effect of the difference between the two conditions by taking a silk hat. The silk hat is black, but in looking at it, how large a portion of its surface is in reality black? There is a large streak of almost pure white, a great quantity of grey, and only a very small quantity of black, the local colour. In nature, this principle is observable in every object on which the eye rests. It is, therefore, necessary for the decorative artist to use his colour of full force, for nature will destroy by her magic and immutable effects the apparent monotony of the colour. The Orientals have long been aware of this, and have never feared to paint a vase all one colour, and that colour a violent one. With the picture-painter, his effects he has himself to produce by the study of nature.

Such are some of the "mysteries of colour" which modern investigation has laid bare, and

the application of the results of which are innumerable. It may be said without exaggeration that their discovery has effected a revolution in the artistic world within the last generation. It is the knowledge of their manipulation which has given to so great an extent the superiority to the foreign artist and manufacturer over his English brethren and competitors.

THE MIDLOTHIAN FAGGOT BUILDINGS.

There was one little circumstance connected with the celebrated Midlothian election in which Mr. Gladstone defeated Lord Dalkeith, which may very properly come within our purview, or, in other words, the scope of our observation, and of our critical commentary. In the present overheated state of the political atmosphere it may probably be deemed slightly unwarrantable on our part to venture to deal with any subject relating to politics. The fact is, however, the gods have not made us political. We are accustomed to regard even political buildings from a purely professional point of view. But we must confess that the Whig and Tory tactics in building houses has something more to do with our approbation than the mere method of manufacturing fictitious votes; and we may point out that there are one or two questions involved in the pure economy of the subject which concern the whole of us who are, however slightly, engaged in the progress of society. There is an old proverb to the effect that honest men come by their own when another class of the community fall out. And, accordingly, we have often thought when the Whigs and Tories took to building houses in the counties for the purpose of creating votes, it was just possible that the over-worked and over-crowded artisans of our large and densely-populated towns might reap the benefit; and so possess themselves of a suburban residence at a moderate cost, and with a clear and unmistakable title. The experiment has been tried in Midlothian in something of the following manner. We tell the tale as it was told to us, but we have no reason to doubt either the authenticity of the newspaper reports or the veracity of our correspondents.

In the centre of the county of Midlothian, or at least within a mile of its head centre, there stands at this moment,—or, at all events, stood the last time we saw it,—a solitary and somewhat isolated toll-bar called Tyne Castle. That district of the suburbs of Edinburgh has never, we believe, up to this date, become a populous district. Several extensive workshops, such as those of Morison & Co., the well-known upholsterers; several coal depôts, such as those peculiar in their dinginess to the Caledonian Railway; and, lastly, one of the humbler order of cemeteries, the Dalry Cemetery, occupied the intermediate ground between the city and the toll-bar. The district, in fact, might have remained obscure enough had it not occurred to the scheming brains of the everlasting brood of building speculators in Edinburgh that it would afford a splendid site for the erection of faggot buildings whereon to constitute, by proprietorship and otherwise, a community of faggot-voters! The land lay indisputably in the county, just beyond the Parliamentary boundary of the city; and it appears that the land-agents had got hold of several feus.

Accordingly it was announced in all the local newspapers, including that usually well-informed journal, the *Scotsman*, that Lord Rosebery had found out a method by building houses for the working-classes to neutralise the Duke of Buccleuch's method of creating faggot-votes by *dividing* his property among the upper classes. Of course, the whole thing was a bubble, but it took tremendously. The excitement, in fact, was something wonderful. Liberals were to have the preference as purchasers. Workmen were employed on day and night shifts, for the purpose of hurrying up the carcasses. The electric light was called into requisition; no expense was spared; no risk was not incurred,—even that of building during a severe frost,—in order that the owners and occupiers should be qualified before the fatal 24th of January. Of course, any shrewd politician could see that in the teeth of an impending dissolution of Parliament such a recent qualification would be inept and worthless for the next election. But that was nothing. The speculators sold and got deposits as soon as the roofs were on. Working men were known to leave their work for a day, in order to buy their property and deposit their 10*l.* or 20*l.*, as the case might be. And thus far succeeded the Whig blocks. But the Tories, seeing the trick, took immediate steps to counteract the danger, by commencing and rearing another tenement or two on the opposite side of the way, besides purchasing, it was said, at an enormous ransom, the whole remaining ground-rents in the neighbourhood. The respective tenements soon got to be known as the "Whig Block" and the "Tory Block," or the "Whig Faggots" and the "Tory Faggots."

What is a faggot? our readers will ask. A bundle of sticks. What is a faggot vote,—a bundle of voters? The analogy is not, however, perfectly clear. The original and ancient meaning of the French *fagot* was literally a brush, or, as in the verb *fagoter*, to jumble together. And there is a curious signification in our old *Dictionnaire Français*, which suggests that he deserves to be burnt alive if he resemble a faggot! But however right or wrong it may be, a faggot voter is now held in ordinary Parliamentary parlance to signify a *fictitious voter*,—a voter who is not resident in the county, and therefore has no business to vote. But these buildings, which consisted of the ordinary four-story tenements, were so cleverly managed as to escape this obloquy and opprobrium. The proprietors were also held to be the tenants. The working-man was proprietor of his own house. There was, therefore, no such moral difficulty as beset the Duke of Buccleuch; for there can be no doubt whatever, if we had trusted the current reports, that the Buccleuch party had created a certain number of fictitious faggots. There can be as little doubt, still following the same authority, that Lord Rosebery, with the true sporting instinct which is said to belong to him, determined to "cope" these fictitious faggots by real faggots. The result was building in the county, as we have said, a Whig block of buildings, which was followed by a Tory block, until the whole neighbourhood got into one scene of bustle and political excitement.

But the secret began at length to ooze out, and the bubble burst. Lord Rosebery had had nothing to do with them, neither had the Tories. The whole thing was a piece of clever speculation, and as such, of course, "a mockery, a delusion, and a snare." In point of fact, all such miserable expedients, political or otherwise, in the end defeat their purposes. The erection of dwelling-houses for the working classes can be no political trick in the county of Midlothian or anywhere else. In this case, as might have been expected, the speculators have failed,—the houses are standing half empty, and partially sold. Two or three tenements of very inferior property now stand on the threshold of the county of Edinburgh, at Tyne Castle Toll, and "the Whig block" and "the Tory block" but for this slender notice might, in process of time, have disappeared into the regions of historical oblivion!

A Scot.

NEW PUBLIC HALLS AT BRIXTON.

Brixton, in common with other suburbs of the metropolis, has made remarkable strides in the number of its houses and population during the last five-and-twenty years. More than a quarter of a century ago, the Angell Town estate was laid out and built upon, and St. John's Church and schools, erected from the designs of Mr. Benjamin Ferrey, were illustrated in the *Builder* at the time.* Among the buildings erected at that period is the Angell Town Institute, a hall which, primarily intended for musical purposes, has been and continues to be of great use to the neighbourhood. The construction of the London, Chatham, and Dover Railway through Brixton some years later of course gave a great impetus to the growth of the suburb, especially southwards, and to meet the demand of the increased population for concerts, lectures, and other entertainments, and also to provide for political and other public meetings, similar buildings have of late years been erected, among them the large hall of the Surrey County Club in Ferndale-road (originally intended for public baths), from the designs of Mr. F. H. Fowler, and the Mayall-road Lecture Hall, from the designs of Mr. Cable. The Loughborough Hall, recently opened, and the Brixton Concert Hall, now in course of construction, are the most recent specimens of this class of building in the locality in question.

Loughborough Hall, situate at Loughborough Junction, with its main entrance from Coldharbour-lane, is immediately contiguous to Loughborough Junction Station, and is, indeed, bounded on one side by the main line, and on the other side by the Crystal Palace branch of the London, Chatham, and Dover Railway. Side entrances are provided from the covered colonnades (leading to the booking-office) under the station platforms; and on the ground-floor, fronting on to the colonnade, provision is made for a series of four or five shops on each side. The remainder of the space on the ground-floor it is proposed to utilise as a minor hall, suitable for use, when necessary, as a supper-room for ball-parties, &c. The principal hall, 64 ft. long, 29 ft. wide, and 22 ft. high from floor to ceiling, is approached from the entrance-hall (19 ft. by 13 ft., and 22 ft. high) by a commodious stone staircase, with ladies' cloak-room and lavatory at the top, and similar conveniences for gentlemen at the bottom. The staircase and entrance-hall are well lighted by day by a large lantern light. At the further end of the large hall refreshment, smoking, and retiring rooms are provided, together with a private staircase for singers, lecturers, and others. The hall is capable of seating 700 persons, but will be largely used as a ball-room, the floor being a good one of pitch pine. At the lower end of the hall is a gallery capable of seating about 140 persons. The hall is well lighted by day by large windows facing the railway on either side, but filled with obscured glass. By night, a sunlight in the centre of the ceiling, and a number of wall-brackets, give abundance of light. The ceiling is coved above the level of the window-heads, which open inwards on pivots. As additional means of ventilation there are two perforated rosettes or flowers in the ceiling, above each of which is fixed one of Howarth's large Archimedian revolving cowls for extracting the vitiated air. Fresh air is admitted by inlets placed at intervals round the walls at a height of 7 ft. or 8 ft. from the floor. The architect of the building is Mr. H. Parsons, Mr. Snelling, of South Lambeth-road, being the builder.

The Brixton Concert Hall, situate on the north side of Acre-lane, some five or six houses from the corner of the Brixton-road, is being erected under the direction of Mr. J. W. Sawyer, at a cost of about 5,000*l.* The works are well advanced, and it is expected that the buildings will be finished and opened about the end of June or beginning of July. On the south the buildings have a frontage to Acre-lane of 50 ft. In the centre of the façade, which is rendered with Portland cement, is the main entrance, consisting of a doorway opening direct into a corridor, 120 ft. long, 10 ft. wide, and 14 ft. high, leading straight to the south door of the large hall, which, unlike Loughborough Hall, will have its floor but slightly raised above the ground-level. The corridor just mentioned passes under the buildings fronting Acre-lane, and then, for a length of 50 ft., the distance between the front buildings and the large hall, has a continuous glazed roof. On either side of the entrance to the corridor is a shop with dwelling-house, which will be separately let to tradesmen, and over the front portion of the corridor is a residence for the hall-keeper. The large hall is 70 ft. long, 40 ft. wide, and 26 ft. high from floor to ceiling, the height to springing of cove being 21 ft. 6 in. At the further end of the hall is a raised stage or platform about 20 ft. by 18 ft., with proscenium, and with retiring-rooms on either side. Approached from the northern end of the main corridor will be covered ways leading round outside the walls of the large hall to the retiring-rooms on either side of the stage, these approaches being for the convenience of singers, lecturers, and others. Beneath the stage will be a basement available for the stowage of chairs, &c. The hall will be capable of seating about 700 persons. No gallery will be erected at present, but provision is made for the erection of one at the south end when needful. Separate retiring-rooms and cloak-rooms for the audience are provided at the northern end of the main corridor. The large hall is well lighted by day by ranges of windows in the side walls, and at night it is proposed to use three sunburners. For warming purposes, open fireplaces will be used. For ventilation, inlets for fresh air will be provided at the level of the window-cills, about 8 ft. high, and perforations in the ceiling will be provided for extraction purposes. The roof will be covered with galvanised corrugated iron, carried on timbers supported by framed kingpost principals. A panelled dado of wood, 5 ft. or 6 ft. high, will form one of the features of the hall. In the rear of the shop on the left-hand of the corridor as

* See vol. xi. (1853), pp. 293-7, 330.

the visitor enters from Acre-lane, and on the west side of the glazed portion of the corridor, is a minor hall, 50 ft. long, 18 ft. wide, by 14 ft. high, lighted and ventilated from the top by a large lantern-light. This hall, which will have its walls match-boarded, is, like the large hall, on the ground-floor level. It will seat 200 persons, and will be approached direct from the main corridor. On the other side of the corridor, also on the ground-floor level, is a committee-room, 30 ft. by 18 ft., lighted from above by a lantern. Adjacent are ticket-taker's office, lavatories, and other conveniences.

It is to be hoped that the buildings of which we have here given a few notes will answer the expectations of their promoters, and become centres of intellectual recreation and innocent amusement.

ON QUANTITIES AND QUANTITY PRACTICE.*

INSTITUTION OF SURVEYORS.

THE subject of this paper is one of great interest to many of us, and of some consequence to all, as it involves many questions affecting property, and many points of professional practice. Indeed, few buildings are now erected without the agency of the quantity surveyor, whose work, skill, status, responsibilities, and the sources of his remuneration are thus rendered matters of moment to all concerned in house property; and, although in the lay mind there may exist considerable want of knowledge as to quantities and quantity surveyors, there are, as a matter of fact, few persons who have not at some time participated (though perhaps unconsciously) in the advantages of the present system.

The difficulty of making the practice of a quantity surveyor and its aim intelligible to an unprofessional mind is sometimes great, and occasionally strange definitions of it are found, even in the law reports. But it is scarcely necessary to say, in this room, that the work of the quantity surveyor is to calculate and set down in order the amounts and descriptions of the several artificers' work necessary to the erection of a building, in accordance with drawings and specification supplied, in order to enable the proposed builder or the competing builders to calculate the cost in the easiest, surest, and most expeditious manner. From want of acquaintance with the facts, the quantity surveyor is frequently regarded by members of the general public as a sort of interloper who, for his own ends, takes upon himself to do work which should be performed by the builder in preparing his estimate, thereby unnecessarily increasing the cost of the building. Were this the case, or did he not meet an acknowledged want, it need hardly be said that the quantity surveyor would soon cease to exist. The fact is that the quantity surveyor is a necessary adjunct to the modern system of contracting and tendering for work, and that, as almost all contracts are now put out to competition in order to ensure the lowest cost, were it not for his labours the work which he does, once for all, would have to be done by each competing builder; and were this so, many builders would be compelled either to refuse to compete for work altogether, or to keep such a staff of estimating clerks as would oblige them very materially to raise their prices in order to obtain their profit.

Another fact to be had in mind is that a competing builder would not take out quantities with that attention to detail, nor with the fulness and accuracy of description habitual with a professional surveyor acting on behalf of the whole number of competitors. He would require such data only as would enable him, with the aid of the drawings, to arrive at a price, to be submitted with those from other competitors. He would, in all probability, "lump" many items, for the sake of saving time and trouble, mixing up work in different trades, allowing one thing to be set against another,—in short, rather jumping at his price than basing it upon exact calculation. This kind of arrangement, when it occurs, is generally a species of lottery; the successful competitor probably finding that he has to practise a good deal of careful scheming before he can obtain a profit, perhaps discovering some error or want of caution in the measurement, or in pricing imperfectly described items, while the unsuccessful competitors have the dissatisfaction of having gone through a good deal of wholly unprofitable labour.

No doubt, it is frequently stated that building surveyors pay too much attention to minutiæ, and are too careful in enumerating such things as mitres, stoppings, notchings, &c.; but this is more generally said by those whose main desire is cheapness, and who, at the same time, have a notion that a careful enumeration of minor matters increases the cost of a building. This may sometimes be the case, but it is by no means necessarily so. It is also suggested that the great amount of detail into which a surveyor goes is superfluous, because the majority of insignificant items are rarely priced by the builder in making his estimate. This is true in some cases, and to a limited extent; but, at all events, the builder has the opportunity of making a complete estimate if he pleases, or, if he prefers, a glance at those items that he does not wish to price will be a guide in pricing the more valuable ones to which they refer. For instance, a surveyor may expend great time and care in measuring the labour upon stone, and the contractor may put such a price upon the cube stone as, in his judgment, will cover the labour, leaving the labours unpriced; but he does not do this without looking at the amount and description of labours measured and comparing them with the amount of stone. It is a great pity that contractors are not more careful to price their quantities in greater detail; indeed, the bestowal of a little more time in this respect would frequently tend to obviate much uncertainty, and I can imagine that the want of it might, in work carried out under a not over-scrupulous architect, prove very disastrous to the contractor.

This brings me to the consideration of another view of the desirability of having properly-prepared quantities, and that is, their usefulness in the final settlement of accounts. In the carrying out of almost every building, certain deviations from the original design or descriptions are made; some entailing extra expense and others resulting in reduction of cost. These are sometimes very numerous and intricate, and it becomes most difficult to arrive at a satisfactory adjustment of these *extras and omissions* in cases where the contractor has taken out his own quantities. He is then practically in command of the position, and may put such a complexion upon the matter that, without tedious and expensive litigation, the employer may be seriously injured. It may be said that this could only occur by reason of dishonesty on the part of the builder, and that a dishonest builder should not have been employed; but it may equally well happen that the builder intends to do no wrong, but only to save himself from suffering a real or supposed loss, or is acting on the principle that every man has a right to obtain what he can for what he sells. The cause for the apparent one-sidedness of an arrangement made in this way is, that while the *omissions* can only be valued from the builder's *ipse dixit*, all the *extras* are visible and tangible, and can be measured with the most perfect accuracy and attention to detail, with all labours, plugs, screws, blockings, &c., and can be valued to the utmost penny. But with a priced copy of properly-prepared quantities, and the original dimensions in our hands, the amount to be paid at the final settlement of accounts ceases to be conjectural, and, however large or numerous the deviations may have been, becomes a mere question of arithmetic.

It would be impossible within the limits of a single paper to do more than allude to the various methods of taking out quantities, and a short description of a few general principles of the art is all I shall attempt. There are, I may premise, a variety of sources of knowledge open to the young building-surveyor desirous of perfectly qualifying himself for the responsible duties that he may afterwards be called on to perform. Much of the necessary knowledge may be gained from books, and all young men intending to make this their profession should read largely upon the subject; but, as they read, they will find differences of opinion among the authors they consult, and they will learn from this that reading must be supplemented by observation and practice.

Practical work for a short time at the carpenter's bench or the mason's banker has been much recommended as a preliminary training, and may not be without its uses; but it may be questioned whether the time spent in actual work of the kind would not be more profitably employed in intelligently observing than in learning to perform mere manual operations. Similarly, the study of buildings in course of erection will tend toward the practical training of the pupil, supposing him to have the power of observation, and the constructive capability necessary for his future success.

Measuring-up works is a part of the practice which assists a young surveyor very materially to a good style in taking out quantities; different methods of doing work are seen, improvements in construction are noticed, and the mind becomes more practical than would otherwise be the case. But the acquisition of this art offers no exception to the rule that "there is no royal road to learning." Quantity-taking must be begun at the beginning to ensure success. The drudgery of squaring dimensions must be gone through by the pupil, who, when he has acquired the requisite facility, may be advanced to the duty of abstracting, and then to that of writing the bills; and he should understand the ultimate object of the operations on which he is engaged,—that the dimensions form the details for the abstract, and the abstract the basis of the bill, and that the completed bill has for its object the saving of labour in pricing. This latter fact should, indeed, be constantly kept in mind, not only by the pupil, but also by the principal, who is sometimes apt to lose sight of this, the main object of his operations.

Reverting to the subject of greater or less minuteness of detail. It will be obvious that in some cases it would be advisable to go into very much more detail than in others. It occasionally happens that a long description, illustrated by a sketch in the margin of the bill, will best help the builder in arriving at the cost of some feature or element in the work. Sometimes, on the other hand, the better way is to measure the work in considerable detail, so that, although its individuality is lost in the bill of quantities, its components are added to those of others and priced with them. Sometimes, again, from the fact of only one object of a kind existing, it may, with advantage, be numbered, as a slight difference between actual and estimated cost is not increased by multiplication; whereas, if there were several features of the same kind, greater detail should be observed, as a trifling error in the price of one would obviously become magnified. Another illustration of this principle is met with in large works like hospitals, workhouses, &c., where there is a large amount of repetition as regards the features, such as many windows of the same size and kind; and it is easy to see that great attention to *minutiæ* is necessary where one window only is actually measured and multiplied many times, as that which would be inappreciable in the one becomes serious in the many. Here allow me to suggest that in proportion to the size and apparent simplicity of a proposed building is the necessity for minuteness in every detail of the quantities, and it by no means follows that a surveyor's labour is very much less upon a large and so-called "repeating" building, in proportion to its cost, than upon a smaller one, although it is frequently supposed to be so.

Many differences in practice exist between building-surveyors in London and those in the provinces, and they mostly depend upon the greater or less amount of detail considered necessary. Take, for instance, the custom in northern counties of setting the deduction of brickwork for a door or window opening against the extra labour involved in forming the opening, and disregarding both. This custom may effect an insignificant saving of labour in the preparation of the quantities, but it might bring about very erroneous results; and while in some cases it may be perfectly legitimate, it is far too dangerously inexact for a general rule. A still more extraordinary method of measurement is, or was sometimes, used in Scotland, in the case of stone fronts to buildings. The width is multiplied by a height obtained by girting the front from top to bottom, including mouldings, strings, plinths, cornices, &c., and the area thus obtained is considered sufficient information as to the value of the stone in the front. This method would appear to be closely connected with those parts of the country in which granite is easily obtained, the labour upon this material being the principal part of the expense on account of its hardness, which also necessitates a plain and bold treatment, and under these

* Paper by Mr. Cecil George Saunders, read at the Ordinary General Meeting of the Institution, on Monday, April 12th, Mr. Thomas Chatfeild Clarke (Member) in the chair.

circumstances the practice may well be conceived to afford a ready and tolerably accurate means for making an estimate. As a general rule, country surveyors are believed to make shorter work of their quantities than their metropolitan brethren, and, without going into elaborate descriptions, they seem to expect, and country builders to consider, that the prices of many items should include the cost of minor matters which a London surveyor would feel bound to put down.

In one or two respects, however, it is open to question whether we, in London, are sufficiently explicit even now. The manner, for instance, in which timber is described in quantities is a special case in point. The item "fir framed" may comprise ceiling-joists 3 in. by 2 in., and floor-joists, 12 in. by 3 in.; but the relative amount of sawn face on one is twice that on the other, and the relative cost of fixing and framing might be in somewhat the same proportion, so that a fair price per foot cube in one case would not be so in the other; and, in the absence of further information, the competing builder has to guess at the preponderance of large or small scantlings. Similarly, no distinction is made between timber which has to be sawn from balk, and planks, deals, or battens which are imported of the sizes specified to be used. In Yorkshire these points are taken into consideration, and the item of "fir framed" is divided into smaller amounts according to the purpose and scantlings of respective pieces, and in some cases the number of cubic feet is accompanied by a list of the pieces showing their lengths as well as their scantlings, so that the builder may see not only the labour necessary in framing and fixing, but also whether he can buy ready-cut deals, &c., or will have to saw timber for the purpose.*

THE POLYCHROMATIC DECORATION OF VARIOUS BUILDINGS.†

PROCEEDING with our analysis of the system of polychromy of the Middle Ages, we find that as Gothic architecture developed in the thirteenth century, which it did in a truly marvellous manner, a corresponding change took place in the coloured decoration applied to buildings, in order to adapt it to their altered construction, their mouldings, and other details. Every step in this course of progress, however, was thoroughly consistent with common sense, and the result of profound judgment and observation, which seem to have been universal, and shared by the whole body, and not either local or confined to individuals. The colouring was still in due subordination to the architecture, and the main object of its application was still in order to emphasise and enhance the effect of the construction. The greatly-deepened hollows, and the far bolder projections of the mouldings of our Early English, and the corresponding styles upon the Continent, obviously called for more vigour in their coloured decorations, for the purpose of giving each separate member of them its proper and appropriate value at a distance.

The introduction of richly-painted glass into the windows, by the very fact that it diminished and modified the light, necessitated the use of more vivid and stronger colours throughout the interiors of the buildings, in order to prevent the openings from appearing as isolated patches of powerful colour. Consequently the whole of the polychromatic treatment had to be raised up to an altogether higher key than had prevailed previously. Deeper and richer blues, which had been carefully avoided before, began to be employed, and gilding, which was found to be the appropriate contrast to blue, was almost needed to support its intensity. Then all the reds, the purples, and the greens required to be increased in strength, in order to enable them to hold their own in such company, so that other colours than the simple earth colours, and other mediums than in the tempera paintings, were introduced into practice. Still, while the general effect was thus greatly enriched, strict harmony was carefully maintained throughout; and in order to prevent indistinctness and confusion, the heraldic principle of not allowing colours of one kind to be placed in juxtaposition with those of another, without the intervention of black, white, or gold, was adhered to with excellent result. These more powerful materials, and the traditional system of employing them, enabled the decorative painters to deal with the more complicated perspectives of interiors as successfully as, though in some degree differently to, their predecessor's method with the simpler problem. The multiplication of shafts and members of the piers, and of arch mouldings and vaulting ribs, demanded and received more vigorous application of colour, in order to accentuate and render distinct all the numerous portions of their several members of the construction. Nevertheless, it was even more necessary than before that great restraint should be used, and the decoration kept to a sternly conventional character. Otherwise, had the painters allowed themselves, or been allowed, to give rein to their fancies and imagination, and to indulge in naturalesque or picturesque representations, the utmost confusion would have been the inevitable result. The numerous small portions into which the wall-space of spandrels of vaulting, &c., had become subdivided, if covered with decorations which did not respect and even emphasise the fact of their being solid and flat, would have resolved themselves into separate, disconnected, ill-shaped pictures, and the whole interior would have become an intolerable jumble. The common sense and good taste of the Mediæval painters prevented any such attempt on their part to overstep the proper limitations of their art, when employed to decorate the works of architecture. No thought of representing distance, aërial effects, or perspective occurred to them; anything at all approaching the pictorial was, in the first place, clearly marked out and confined within borders, so as to appear as panels upon the wall-space, and the painting was all kept strictly in one plane within these borders, in order to avoid making the panels appear, as they otherwise must, like holes in the wall. Such limitations and conditions, however, left ample scope for appropriate artistic treatment of the highest class, and it was only what was obviously contrary to common sense and injurious to the general effect that was eschewed.

It seems desirable to show, by a few examples selected from among the works of the Middle Ages which have been referred to, the manner in which the above-mentioned principles were conformed to. The remains of coloured decoration in our own country are sadly fragmentary, though numerous, as may be seen by the long list of those given in the very admirable work on "The Decorative Painting of the Middle Ages," by Mr. E. L. Blackburne, which is in the Institute Library. The third volume of the "Vetusta Monumenta," published by the Society of Antiquaries, contains a record and illustrations of a most interesting and remarkably perfect example of early polychromatic treatment of a building of the twelfth century. This was a small church belonging to the hospital of St. Mary Magdalen, on the hill near Winchester, unfortunately destroyed in 1788. The above-named illustrations and descriptions may be studied by the student with advantage.

Many of our cathedrals, as Norwich, Rochester, and Durham, retain some interesting remains of their former coloured decorations, and Canterbury possesses a unique chapel in its crypt, the interior of which is entirely covered with its Early Norman paintings, in a state of nearly perfect preservation. In default of more complete specimens of coloured interiors extant in our own land, from which to gain a clear notion of their general effect, we are fortunate in being able to turn to the record of several that have been well described, and minutely analysed by the late M. Viollet-le-Duc in his valuable "Dictionnaire de l'Architecture Française." As the illustrations in that work are not coloured, they do not, however, convey to the general reader any clear idea of the effect of the originals. A short *resumé* of his account of some of the examples mentioned by him, accompanied by enlarged drawings to which colour has been added in accordance with his descriptions, may therefore be interesting and of use. The series of specimens of chromatically-decorated buildings referred to by that author, as existing in France, commences with those of the simpler harmonies, and is continued with successively more and more elaborate ones; and thus it shows the practical working out of the system of polychromy, under the ever-changing condition of the several Mediæval styles, of which I have endeavoured to explain the theory.

The lower hall of the keep of the Castle of Coucy is decorated in the simplest possible manner, with merely yellow and red ochre (brownish red), black, white, and grey. Although the effect is scarcely more than that of a warm grisaille, even this combination is seen, in this example, to be capable of producing very varied effects. These earth colours, red and yellow, harmonise naturally; and patterns of yellow on the brown and red, or the reverse, when outlined with white or black, or with both, produce a result which is delicate, at the same time that it is clear and distinct. There are, it should be noted, elsewhere in this apartment, a few touches of green and vermilion, as in the capitals of the columns; but there is no blue, beyond the quiet bluish grey, previously mentioned as the nearest approach to blue used at that period.

The illustration [exhibited] represents parts of the square-edged ribs of the vaulting, which have ornaments on the face radiating with the voussoirs, and running scrolls on their soffits. In No. 1 the ornament is dark yellow (composed of red and yellow ochre mixed). This is outlined by broad lines of chocolate (the red ochre and black mixed), with narrow lines of white within the darker one. The groundwork is of yellow ochre with white spots upon it. No. 2 is outlined with chocolate and white lines; the stalks are of slaty grey, and the ground is yellow ochre. No. 3 has the ornament of deep reddish brown, with chocolate and white outlines and the ground yellow ochre. It will be obvious from these few examples that variety and delicacy united with force can be obtained by the simplest means if used upon right principles.

The Refectory of the Commandery of the Knights Templars, at Metz, is a building of early thirteenth-century work. It consists of a hall composed of two divisions, with a central row of columns. It is decorated in a simple manner, without either blue or gold, and yet with a wonderfully bright and rich effect. The groundwork is white, and the ornamentation in yellow and red ochres, with a few rare touches of grey. Some panels upon which figures were painted have borders representing an architectural canopied framework; but it is noticeable that the treatment of the details is rigidly flat, and without any attempt to give relief to any portion. Such a class of decoration is capable of execution at a very small cost, and by ordinary workmen, which is a great desideratum. Being conceived upon right principles and a good system, a satisfactory effect is certain to be produced, without fear of the mistakes happening and the confusion occurring which are the almost invariable result of unsystematic attempts at decoration, even by able artists.

These two examples will suffice to explain the general character of the early Mediæval polychromatic decorations; the next to which I shall refer is of later date and more advanced character. The choir of the church of St. Nazaire, at Carcassone, has a remarkable treatment in colour, which is also elaborately described by M. Viollet-le-Duc. The windows, which nearly occupy the whole of the walling space, are filled with richly-tinted painted glass. For some reason, probably that of economy, gold was not employed, and blue was in consequence avoided. The problem had then to be met in a special manner, and the old simple harmony to be in the main adhered to. The vaulting was the principal field, besides the windows, left for decoration; the groundwork of its spandrel spaces were left white, and powdered with stencilled red stars, and each spandrel bore upon it the figure of an angel clad in yellow drapery. The vaulting ribs, together with broad borders on each side of them, put to strengthen and emphasise these important features of the construction were decorated with exceedingly rich, delicate and sparkling ornament, closely resembling that of Giotto's chapel at Assisi, in red and yellow, with touches of dark colour; a bold broad band of red marked the line of the ridge of the vaulting (like the accentuation nature generally accords to the spine of an animal). This carried the eye forward to the easternmost triangular spandrel next the apse, which was made the key-note of the whole, the groundwork being, in striking contrast to the white elsewhere, of deep brown colour, and the angels light upon it. In the centre of this spandrel is a circular panel containing the figure of Our Lord in majesty, seated on a throne, clad in purple robe with green lining. His nimbus is gold, thrown up by a blue aureole behind, and the

* To be continued.

† From a paper by Mr. J. P. Seddon, read before the Royal Institute of British Architects on the 5th inst. (See p. 454, *ante*).

ground of the panel is bright red. This concentration of rich colouring in one portion of the composition, with the restraint maintained throughout the rest, shows a great degree of knowledge and skill in producing effect, and proves that the system to which the artist conformed was one that was by no means necessarily cramping to individual taste.

The principles sufficiently indicated by these simple examples were carefully observed even in the most elaborate, and tended to preserve sobriety in the midst of the utmost splendour. Would that we could recall, in imagination at least, the effect of some of the sumptuous buildings and their contents, which formed a galaxy of artistic glories around the shrine of the Confessor, in the Monastery of St. Peter at Westminster, and the palace adjoining it. The only fear, if we could do so, would be that we should be setting ourselves under the tyranny of precedents that might extinguish originality as completely as those of Athens could do. And we might also be in danger of canonising Henry III. as patron of the noblest art, and of forgetting that he lacked some other very necessary characteristics of royalty. First, we should have his graceful abbey itself as the casket, containing the brightest jewels; not as now, reduced by solutions of shellac to one dead dull monotony of mud colour, but gleaming in polished Purbeck marble, as may be seen to have been the case by some portions which have been fortunately preserved in this condition in the north transept. This exquisitely refined material was the very best that could be conceived to set off and enhance the beauty of the wondrous royal tombs, not to speak of the gorgeous shrine of the Confessor in their midst. Over and around them shone the pearly light of the painted windows, of the effect of which we can gain some idea from those still left in the apse clearstory, with figures of proper scale, and subdued and retiring but rich and jewel-like colouring. Their radiance fell upon monuments, such as those of Aymer de Valence, Earl of Pembroke; and of Crouchback, Earl of Lancaster, and Aveline, his countess, which I select not as the finest, since doubtless they were excelled by the royal tombs, but as the best known from their prominent position and as the best preserved. Their graceful forms, perfect proportions, and exquisite architectural decoration, are still patent, but as they have suffered from the universal modern mud-wash, I turn to Mr. Blackburne's description of their original decorations to convey some idea of their pristine beauty:—

"The effigy of the knight (Aymer de Valence) lies beneath an elevated canopy, profusely ornamented with painting and gilding. The grounds of the niches are painted blue and red in alternate order, dispered with small gold flowers: those of the trefoils are red, and those of the quatrefoils green, powdered with gold flowers. The whole of the fillets and hollows of the tracery, with the shafts and capitals, crocketing and finials, are gilt."

St. Stephen's Chapel, the Painted Chamber, and many other exquisite works in the same locality have perished, leaving only fragmentary evidences of the extreme delicacy and refinement of their execution. It would be tedious, however, to multiply examples or to enter into a minute description of the details of those already cited, although I strongly advise students to examine closely into them for themselves. Sufficient has been said to show how thoroughly Mediæval polychromy was based upon system, and how that system was one evolved from a common-sense consideration of requirements with the refinements of good taste and perfect judgment.

It would be presumption on my part to attempt to describe or criticise the glorious works in polychromy of the Middle Ages of the South of Europe. It would, moreover, be only traversing ground already far more ably dealt with than would be within my power, by Prof. Lewis, in the exhaustive paper read by him in the session of 1862, and published in our Transactions. I am fortunate enough, however, by his kindness, to be able to display some of the illustrations prepared for that occasion, and I would strongly advise those who desire to pursue this subject to consult what he has there written with respect to it.

Venice, Ravenna, Messina, and Monreale, are all names which call up to the mind visions of the most gorgeous colouring ever attempted in architecture. Of one of these (Ravenna), Prof. Symonds remarks that,—

"There is nothing more beautiful in decorative art than the mosaics of such tiny buildings as the Tomb of Galla Placidia or the chapel of the Bishop's Palace. They are like jewelled and enamelled cases: not an inch of wall can be seen which is not covered with elaborate painting in the highest colours. Tall date-palms spring from the floor with fruit and birds among their branches, and between them stand the pillars and apostles of the church. In the spandrels and lunettes above the arches, angels fly with extended wings: on every vacant place are scrolls and arabesques of foliage, birds and beasts, doves drinking from vases and peacocks spreading their gorgeous plumes; a maze of green and gold and blue. Overhead, the vault is powdered with stars gleaming upon the deepest azure, and in the midst is set an aureole embracing the majestic head of Christ, or else the symbol of the sacred fish, or the hand of the Creator pointing from a cloud. In Galla Placidia's Tomb, these storied vaults spring above the sarcophagi of emperors and empresses, each lying in the place where he or she was laid more than twelve centuries ago. The light which struggles through the narrow windows serves to harmonise the brilliant hues and make a gorgeous gloom."

Of the works of this class in the South, Mr. Lewis concludes, as I have done in regard to the nearly contemporary decorations in the North, that they were wrought instinctively, "unknowing of the rules now binding us, and ignorant of the prism's very being," and yet with invariable success; and that in them the pictures "were made to form an integral part of the decoration"; and so long as this last-named principle was adhered to, a good effect was always produced; but as this became lost sight of, the individual pictures were aggrandised at the expense of the general *coup-d'œil*. The paintings of the great masters of the Renaissance obliterated, instead of decorating, architecture, and the field so gained for display of their genius and transcendent powers was of course accepted as a boon. It is now when we find the same sacrifice exacted, without like compensation, that we realise the evil the system has done. It is, therefore, necessary to protest against buildings of importance being treated as an eminent artist suggested that the east end of one of our cathedrals should be, viz., painted black, that it might suit his picture, which he had not succeeded in making to suit its position in the cathedral. Classic architecture has been supposed to be more suitable for the display of decorative painting than Gothic, as affording broader surfaces and possessing simpler details; consequently painters have been too often suffered to run riot in them, and to work their own sweet will therein, totally ignoring all architectural proprieties. The work of genius is always welcome, but at the same time it may be misplaced; and misplaced it is when doubtful saints sprawl among clouds upon arch spandrels, or expose naked limbs in every vagary of foreshortening upon ceilings, as those of Rubens do, in the old banqueting-hall,—now the chapel,—at Whitehall. One cannot but wish such paintings in respectable frames upon gallery walls, rather than turned upside down, and destroying all notion of the flatness of the surfaces they are supposed to decorate.

It has always seemed to me that Classic architecture was quite as capable of the same common-sense treatment, as to coloured decoration, as Mediæval, and that in fact it positively needs it more. Its wall surfaces being larger, and its constructive members fewer, solidity and flatness seem essential to it. Now, therefore, that it has become one of the vexed questions of the day, how our mighty metropolitan cathedral should be decorated, if decorated at all, this particular point appears to deserve serious consideration.

The invariable architectural treatment of Classical interiors and that adopted by Sir Christopher Wren (which it is not my present purpose to dispute or defend) is to superpose upon the walling some architectural order, with columns and entablature, and possibly pedestal and attic, as the principal feature. Surely, then, the first object with the colourist should be to emphasise this, and to maintain its unity and importance. Attention, however, it seems to me, is generally given to the manner of variously enriching alike the several members of this order, and of the walling with the arches upon which it stands. The frieze between the cornice and architrave has thus a treatment differing from and contrasting with theirs, the result of which is that the part of the composition (the order) which should be broad and united, and stand out from the groundwork, is cut up and subdivided.

In the two drawings exhibited this evening, which I prepared some time since at the request of the Provost and fellows of Queen's College, Oxford, I had two problems to solve. First, the decoration of their chapel in case the present exceedingly dark painted windows were retained; and second, an alternative treatment, supposing those windows removed to the library of the college and lighter ones substituted. As regards the former, I proposed that the walling should be lined with very light-coloured marble, to reflect all the light possible, and to contrast with the glass; and upon this groundwork to make the order in dark marble, that it might stand out distinctly as the principal feature. In the latter case, the glass was to be kept as brilliant as it could be, the wall-work in dark marble, as a background to the order; the order itself again being in light material, such as the Mexican onyx. The second method is the one that I should certainly prefer, although I notice that constantly the order is made the darker in modern practice. It seems to me that if colour is to accentuate form, the column and entablature, which are themselves projections from the wall, need to be the lighter of the two.

I have in the foregoing part of my paper treated coloured decoration as generally applied to the interior of buildings. I wish, however, to make a few remarks upon it in connexion with their exterior, and that in reference to what is possible and desirable at the present day. I will not attempt to fortify my position again by adducing ancient precedents, for as the brilliant hues have all faded from the Greek temples and from cathedral fronts alike, which we are assured were equally richly painted, we might well hesitate to follow examples which appear to have been so futile in point of durability. Our external polychromy, as a rule, must be in the materials of the construction. As a grain of practice is said to be worth an ounce of theory, I exhibit a drawing of an attempt of my own in this direction for a terrace at Aberystwith. I had at my command admirable rich red bricks from Cardiff, black ones from Staffordshire, and buff ones from Ruabon, with yellowish and blueish grey freestones. I used the red as groundwork, with black for decoration of the ground story; then next above, the red with buff as decoration; and lastly, buff as groundwork, and red as decoration at the top, but emphasising the shadows of the cornice and strings by the use of the black again. By this treatment, the strongest colour is at the bottom, and is gradually lightened upwards. Facing westward, as this terrace does, the sun strikes it at the time when the parade before it is most occupied; it produces a brilliant effect, preferable, I fancy, to the prevalent dirty-paste colour of most of our seaside resorts.

I have noticed with satisfaction that some creditable attempts have recently been made at the west end of London, in the way of innovation upon the muddy tints which until now have monopolised the outside of houses in the vernacular terraces and squares. Sundry mansions in Belgravia now stand out with, on the whole, pleasing contrast to their neighbours, in Pompeian reds, with blacks, browns, and subdued yellows. This fashion, which is spreading, indicates that the old Puritanical fear of colour is waning. The selection of hues of the deeper tones mentioned is judicious, as being the most likely to last. Other more ambitious attempts at external polychromy in Regent-street, with lighter drabs, blueish greys, and gold, seem to me to be far less suitable for exposure in London, whether considered in their freshness or in their inevitable deterioration after a season or two. But the carrying of one coat of deep red over the whole building, from base to chimneys, broken only by the picking out of the orders (or rather parts of the orders) in black, as has been done in several instances in Belgravia, is, I venture to think, not so satisfactory as if the stronger colouring were confined to the lower portion. The partition of the orders also is undesirable, as in one instance where I noticed the pilasters and cornice were black, while frieze and architrave were red like their groundwork, producing at a distance an effect which upon reflection must be seen to be ridiculous. Again, it would appear better as a rule to make the order lighter than the ground, rather than funereal black. Still, after all criticism, these attempts are creditable, and the innovation a desirable one. These examples are, however, but making the best of what exists, and for temporary duration. Should the desire for external colours, which they indicate, extend as may be hoped, it would be well to consider and seek for materials fit for carefully studied and permanent polychromatic decoration.

In conclusion, therefore, I shall make a few remarks upon the materials suitable for the durable execution of the decoration conducted upon the principles I have endeavoured to point out. The regret with which you have doubtless heard me refer to the faded glories of Classical

and Mediæval polychromy is in itself, I think, almost condemnation sufficient of the processes employed in them; while the eloquent description I have quoted of the still fresh and lustrous colouring of Ravenna, and others from the same author, of exquisitely rich interiors in Sicily, seem to commend as distinctly for our use the more permanent work in mosaic, to the fact of their being executed in which this greater permanence has been due. But we are often told that mosaic is necessarily costly, and that the effect is peculiar, and suited rather to southern climes than to our own. I think that both these ideas are erroneous, and based upon the supposition that we must accurately copy the exact methods adopted by the ancients in the application of this material: that we must use it only in the minute and regular-shaped cubes we find in old examples. Doubtless we cannot do better than follow these examples when engaged upon similar elaborate works, but I advocate a far broader treatment for ordinary decoration. To my mind, the employment of equal-sized rectangular cubes produces a disagreeable spotty effect, and sometimes even a comic one, when they are coursed in regular rows up and down faces and limbs. Whereas, by using the material in irregular forms and irregularly, this unpleasant appearance can be avoided.

Granting, however, that the plain wall surfaces and even the vaulting spandrels can be appropriately and permanently decorated with mosaic (for curved planes are as easily plated with it as flat ones), there are still the moulding or other constructive members to deal with, and for which we seem to need a corresponding material. I cannot but fancy that this is to be found in stoneware or other ceramics. At present, if we use a marble shaft, we have nothing for the bases and capitals to be used in connexion with it, except marble, which does not lend itself well to mouldings, and certainly not to carving; whereas, in clay, modelling of any class is easy, and colour is applicable to it before it is burnt. I have constructed a chancel arch with this material at the church in the parish of Ayot St. Peter's, Herts, and was satisfied with the result, and I have also used it in connexion with mosaic in the pulpit of the church of St. James, Great Yarmouth; and I submit drawings made for bases and capitals to accompany marble shafts for a mansion near Kenmare, in Ireland.

Tiles and painted porcelain are other materials to which attention has been already directed, and in which much has been, and more might be, satisfactorily executed. Painted tapestry also has been recently introduced, and appears to me to be capable of good artistic tone, and to be a medium for the application of good art in a fairly permanent manner. In fact, we have but to create a demand for architectural decoration, and to render ourselves competent to design and direct it; and further, to do our best to train or induce artists to learn its requirements, and conform to its conditions, and I doubt not we shall find modern science and invention able to supply us with ample facilities and materials for the purpose. I would, however, rather conclude, as I began, by advising students in decoration to be content with what is simple and to aim at what is true,—to work upon the system which has produced such excellent results in so many ages, and which once mastered will admit of the variety that their matured imagination and fancy may dictate to them.

NEW CHURCH, HAMMERWOOD, SUSSEX.

ON Saturday last, the 10th inst., the Bishop of Chichester consecrated the new Church of St. Stephen at Hammerwood, four miles from East Grinstead. The building consists of chancel, nave, south aisle, two porches, tower, spire, and vestry-room. It is built of stone quarried in the neighbourhood, with Bath stone dressings, the roof being covered with ornamental Broseley tiles. The internal fittings, which are very elaborate, are of solid oak. The extreme dimensions of the structure are 83 ft. long, 41 ft. wide, and 104 ft. high. The site was given, and the entire cost of construction,—between 5,000*l.* and 6,000*l.*,—borne by the owner of the adjoining estate, Mr. Oswald Augustus Smith, of the well-known banking firm of Smith, Payne, & Smith. The architect was Mr. E. P. Loftus Brock, of London, and the contractors were Messrs. Nightingale, Brothers, of Reigate.

THE BUILDING EXHIBITION AT THE AGRICULTURAL HALL.

THE first of an intended series of annual building exhibitions in London was opened in the Agricultural Hall, Islington, on Monday last. The collection of appliances and materials brought together is an interesting one, and though incomplete in some respects, will well repay a visit. It was the intention of the promoters to close the exhibition to-morrow (Saturday), but in deference to the opinion expressed in this journal and in other quarters, that one week was an inadequate period for the existence of the exhibition, it has been resolved to extend the time another week, and to close the exhibition on Saturday, the 24th inst. In the following notes of some of the exhibits, we have roughly grouped the different classes of appliances and materials, without adhering to the classification adopted in the official catalogue (which is, indeed, beyond comprehension in some respects), and without following consecutively the numbers of the exhibitors' stands or show-spaces,—which it was impossible to do on Monday, as very few of the stands had the numbers affixed. This is a defect which will doubtless be remedied, and we therefore give the numbers assigned to each stand in the catalogue.

Bricks, Tiles, Stone, &c.—Messrs. Ashton & Green (279) exhibit a large assortment of ridge and roofing tiles, moulded and plain bricks, terra-cotta goods, &c. At Stand 19, Messrs. W. J. White & Co. exhibit a collection of tiles made by the Broseley Tileries Company, Harpin's pressed bricks, terra-cotta, &c.; and on the adjoining stand Mr. Samuel Trickett has a good representative show of stone, including Maninghen, tooled York, Leigh Carr, Rossendale, Corsehill, and Peterhead. Messrs. Eastwood & Co. (30) make a good show of facing, diaper, and moulded bricks, Staffordshire blue bricks, glazed bricks, ridge and other tiles, fire-bricks, terra-cotta pots and finials, garden edging, and so on. The Hollington Stone Company (31A) exhibit samples of their speciality; and Messrs. Booth & Wheeler (33) are represented by building and paving stone. Mr. John Matthews (34) exhibits Poole's patent square-cornered bonding-roll roofing tile. Mr. Thomas Lawrence (38) is an exhibitor of plain and fancy bricks and tiles. Messrs. Joseph Cliff & Sons (40) exhibit a varied representative assortment of white and coloured ornamental glazed bricks, terra-cotta vases and chimney terminals, Staffordshire blue bricks, &c. Messrs. Ward, McCulloch, & Co. (43) show their patent vitrified blue bricks, coping tiles, &c. The capabilities and excellencies of Messrs. Ransome's patent artificial stone may be fully recognised by an inspection of the firm's exhibits at Stand 122.

Tile and other Pavements.—Mr. J. F. Clarke (Stand 277) exhibits Larmanjat's French floor-tiles, made of compressed concrete. Messrs. W. J. White & Co. (19) show some of the Broseley Tileries Company's encaustic and tesselated tile pavements, which we understand were taken from stock, at a few hours' notice, and were not in any way prepared for exhibition. Messrs. Charles Drake & Co. (42) show their "patent concrete stone" in various patterns and colours, for paving, &c.

Concrete Building.—Mr. W. H. Lascelles (45) exhibits a remarkable fireproof floor made of concrete, constructed on the system lately introduced by him of bringing the materials on the spot ready for fixing. The floor, which has been specially designed by Mr. Norman Shaw, is supported by massive-looking beams and joists of concrete, strengthened with iron internally, and supporting the slabs of concrete which form the floor of the apartment above. The beams and joists are moulded, and the under-surfaces of the slabs are cast with ornament in relief, so that the general effect is very good. Mr. Lascelles exhibits other specialities in this material. Messrs. Charles Drake & Co. (42) show their patent concrete building apparatus. Mr. J. M. Tall (44) is also an exhibitor in this section. The Patent Concrete Building Apparatus Company (46) show Henley's "patent safety revolving and self-fastening concrete building apparatus."

Drain-pipes, Traps, &c.—Mr. James Wilson (Stand 204) exhibits his patent bell-trap, in which the bell is dissevered from the grating, and suspended by a bent bar of metal working in sockets, this arrangement allowing of the bell being raised, when necessary, from over the pipe, but preventing its removal and loss. Messrs. W. Smeaton & Sons (201) show their patent machine-made cast-lead "Eclipse" trap, a very useful production. Messrs. Brazier & Son (160) exhibit their patent fat-interceptor and deodoriser. Messrs. J. Cliff & Son (40) exhibit Potts's patent Edinburgh air-chambered sewer-traps.

Building Appliances and Plant. — Messrs. Selig, Sonnenthal, & Co. (Stand 229) exhibit Sonnenthal's patent "self-adjusting" stone dogs for hoisting stone, which do away with the need of slings or "lewis" holes. The same firm also exhibit Bohlken's patent earth-borers for making holes for telegraph-posts, scaffold-poles, &c. Messrs. Salmon, Barnes, & Co. (2) exhibit a useful little appliance called the "Joiner's Bench Knife." Messrs. F. W. Reynolds & Co. (79) exhibit their "Specialité" mortar-mill, and their "Contractor's" engine, with patent feed-water-heater and steam blast. These, as well as the wood-working machines by the same firm, will well repay examination. The same firm also exhibits a very ingenious little lock-mortising machine, capable of making a hole for a mortise-lock of any size in five minutes. Visitors should see this in action. Mr. Richard Jones (68) shows a barrow, hod, and board hoist.

English Joinery.—Mr. Fredk. Sage (Stand 3) has a fine display of show-cases, counters, and shop-fittings, all characterised by excellence of workmanship. He also exhibits his improved builders' hoarding. Messrs. Esdaile & Co. exhibit a number of doors and steam-struck mouldings, and their plasterers' machine-made laths. Mr. W. H. Lascelles (45) shows some good specimens of joinery and cabinet-making.

Swedish and American Joinery. — Messrs. W. H. Atkinson & Co. (Stand 4) have a good display of Stockholm joinery. Messrs. Clarke, Holland, M'Connell, & Co., of Buffalo, N.Y., exhibit a large quantity of American joinery. Both these exhibits are useful as admitting of comparison with English work.

Wood-working Machinery.—Messrs. Western & Co. (Stand 74) exhibit a couple of band-saw machines, and a 42-in. improved self-acting saw-bench. Messrs. F. W. Reynolds & Co. (79) have a good display of saw-benches and mortising and tenoning machines; and they also show their patent "Universal" wood-working machine. Messrs. M. Powis Bale & Co. (86) are also exhibitors of wood-working machinery. Messrs. Polyblank & Co. (81) exhibit band-saw and other machines. Messrs. T. Middleton & Co. (80) show Shill's patent planing-machines, for hand or steam power.

Chimney-pieces. — Messrs. Wells & Co., of Shoreditch (Stand 278), have a very good display of French and Belgian marble chimney-pieces, and some in American walnut and other woods. Messrs. Ford & Margrett (282) exhibit some chimney-pieces in enamelled slate, and Messrs. Schofield & Co. (280) chimney-pieces in Penmon (Welsh) and other marbles. Messrs. Ashton & Green have a good show of chimney-pieces in enamelled slate. Messrs. Yates, Haywood, & Co. (274) are also exhibitors of chimney-pieces.

Stoves, Grates, &c.—Messrs. Yates, Haywood, & Co. (Stand 274) have a good display of stoves, ranges, fenders, and fire-irons; so have Messrs. Steel & Garland (275), who show, amongst other things, their Wharncliffe patent grate. Mr. J. F. Clarke (263 and 277) has a good representative collection of stoves and ranges, together with his patent balanced gridiron grill-stove, which has been fitted up in many City restaurants and chop-houses. Messrs. Wells & Co. (278) exhibit a variety of close and open ranges, stoves, &c., including the "Waverley" and "Melrose" slow-combustion grates. Another speciality of this firm is their "self-setting" kitchener, all flues being constructed in ironwork and led into one trunk-pipe or flue. Mr. W. Addis (280A) exhibits Badger's patent "open and close" convertible kitchen-range, Cundy's patent brick-oven kitchener, and Cundy's "Economic Cottage Kitchener." Messrs. Ford & Margrett (282) exhibit "slow-combustion" stoves. Messrs. Brown & Green (283) exhibit their prize model kitcheners and portable cooking-stoves, &c. At Stand 284, Messrs. Stevens, Bros., & Co. have a good show of stoves and ranges. Messrs. T. Potter & Sons (270) exhibit the "Thermhydric ventilating hot-water grate," invented by Mr. H. Saxon Snell, architect.

Heating Apparatus.—Messrs. W. Richardson & Co., of Darlington, exhibit (Stand 219) one of their hooded tubular boilers for heating horticultural and other buildings.

Ventilation.—Dr. Hinckes Bird (Stand 231)

exhibits his models for costless ventilation, described in the *Builder* for 1863. Mr. J. E. Ellison, of Leeds (237) shows his patent conical ventilators, mentioned by us with commendation on previous occasions. Messrs. C. Kite & Co. (236) show their patent "ventilating and smoke-preventing" chimney-caps. The "Universal Ventilating Sanitary and Engineering Company" (216) exhibit Stevens's exhaust chimney-top and Stevens's inlet or drawer ventilator; the latter was described in a recent report in the *Builder* of a lecture by Professor Corfield at the Parkes Museum of Hygiene. Messrs. Robert Boyle & Sons, of Glasgow, exhibit their well-known air-pump ventilators, and in one of the essays with which the catalogue is prefaced, Mr. Boyle gives a full description of these useful aids to house sanitation. Messrs. Gilmore & Clark (204A) exhibit their "Autotherarkon," or self-heat-ruler ventilator, which consists of a metal valve caused to open or close by the contraction and expansion of a spring composed of two strips of iron and zinc placed together, the contraction and expansion being dependent on the changes of the temperature in the apartment in which the ventilator is fixed. The inventors claim that the opening spring is not interfered with by the external temperature. Mr. H. W. Cooper exhibits his well-known perforated glass disc pivoted ventilators. Messrs. Verity Brothers (5*) show their patent air-propellers and other ventilating appliances. Messrs. Ewart & Son (260) exhibit their "Empress" ventilator and smoke-curer.

Builders' Ironmongery. — Mr. James Hill (Stand 120) is to the fore with a good display of locks and door furniture. Messrs. Smith & Turner (154) exhibit Mr. Ben Turner's spring door-hinges, and a variety of door-catches, water-bars, &c., all well deserving attention. Messrs. Hobbs, Hart, & Co. exhibit a good assortment of their well-known locks and latches, besides strong-room doors, party-wall insurance doors, &c. Messrs. Wells & Co. have also a good show of builders' ironmongery at their stand (278).

Gates and Railings.—Messrs. Jones & Willis (5c) exhibit some wrought-iron railings; and Messrs. Wells & Co. (278) a variety of cast and wrought work of the same description.

Gasfittings and Lamps are shown by Messrs. Verity Bros. (5*), Jones & Willis (5c), and R. Evered & Co. (6c).

Paints, &c.—Mr. Henry Stephens (Stand 105), shows his now well-tried stains for wood, and Messrs. R. Gay & Co. (106) put in an appearance with their "Impenetrable" paint, as used on the London pillar letter-boxes. Stand 107 is occupied by Messrs. T. Wilson & Co., with their patent alkaline composition for removing old paint from wood, &c. Messrs. G. B. Kent & Co. (114) make a display of brushes for house-painters and decorators. At Stand 122, Messrs. S. & E. Ransome exhibit their patent solutions for protecting walls from damp and preserving stone from decay. Among a variety of other things shown on this stand is Balmain's luminous paint, to which we made reference quite recently. The peculiar light-emitting property of this compound was very effectively demonstrated at a series of dark *séances* given during the day in one of the small portable buildings exhibited. The Silicate Paint Company's stall (which is not numbered in the catalogue) has a prominent display of the company's non-poisonous paints and pigments.

Baths, Lavatories, &c.—Mr. J. F. Clarke (Stand 277) exhibits gas and other baths, coil-case, &c.; and Messrs. W. Smeaton & Sons (201) exhibit their patent needle-bath, spray, shower, douche, and sponge baths, with tip-up and other lavatories. Baths are also among the exhibits of Messrs. Stevens, Bros., & Co. (284). Messrs. Verity Bros. (5*) show their patent gas-boilers for baths. Messrs. J. Finch & Co. (203) exhibit porcelain baths and lavatories. Messrs. Ewart & Son (260) exhibit the "Crown instantaneous water-heater."

Water-Closets.—Messrs. W. Smeaton & Sons (Stand 201) exhibit their patent "Eddystone" closet and their new patent "plug-valve" closet, with full-sized improved D-trap above the floor-line, all made in one piece of earthenware. Messrs. John Finch & Co. (203) are also exhibitors of water-closet apparatus. Mr. E. Howard (227A) exhibits the duplex lid for ventilating water-closets, sinks, &c.; and Mr. D. T. Bostel shows his "Brighton Excelsior" water-closet.

Water Fittings.—Messrs. H. & W. Braithwaite (Stand 221) show their patent syphon for water-closet cisterns. Mr. J. F. Clarke (277) exhibits a patent fire hydrant, which appears to possess the capability of being instantaneously fixed and turned on.

Electric Bells are shown by Messrs. John Orme & Co. (Stand 234), and Mr. A. Schweitzer (225), who has applied the electric bell to hat and coat pegs in such a way that an hotel or hall-door thief would be detected in the act of stealing a coat.

Pneumatic Bells are shown in great variety of application by Mr. C. E. Zimdars (Stand 121). Mr. J. F. Clarke (277) is also an exhibitor of pneumatic bells.

Horticultural Buildings are shown by Messrs. W. Richardson & Co. (Stand 219), who have some specialities in the way of appliances for ventilating greenhouses, and who also exhibit the simple French chain blinds for conservatories, &c. Messrs. Lewis & Co. (241) are also exhibitors of horticultural buildings, and of their patent system of glazing. Messrs. Helliwell & Co. also exhibit their patent system of glazing.

Lifts.—Messrs. Thomas Thomas & Son, of Cardiff (Stand 63), exhibit their "automatic self-sustaining" lifts.

Revolving Shutters.—Messrs. Clarke & Co., of Rathbone-place, exhibit their self-coiling shutters in steel and wood. Messrs. Salmon, Barnes, & Co., of Ulverston (Stand 2), exhibit their revolving shutters, in wood and iron. Both these arrangements are thoroughly well known.

Miscellaneous.—Messrs. Schofield & Co. (Stand 280) exhibit marble table-tops for restaurants, with a groove or channel cut near to the edge and drained into a receptacle beneath the centre of the table-top, so that in the event of a cup of coffee being upset on the table the liquid would not run on to the floor. Mr. J. C. Humphreys (186) exhibits two or three small model portable buildings constructed of wood and corrugated galvanised iron. Messrs. W. Smeaton & Sons (201) exhibit some of the very massive cast-lead rain-water pipes and heads made by them for the new Examination Schools at Oxford from the designs of the architect, Mr. T. G. Jackson. Messrs. Crossley Brothers (64) exhibit one of their "Otto" silent gas-engines, the merits of which are now widely known. Messrs. Legrand & Sutcliff, of Bunhill-row (71), show their patent registering turnstile, Norton's patent Abyssinian tube well-driving apparatus, &c. Messrs. J. & J. Greenwood (224) exhibit models of Greenwood's patent draught-exluder. Messrs. Croggon & Co. (239) are exhibitors of corrugated iron roofing, roofing felt, &c. A prominent exhibit is the ebony and bronze cabinet (said to have cost 2,000*l.*), the work of Mr. Charles Green, of Sheffield, but it does not appear to be mentioned in the catalogue. Wall-papers are shown by Messrs. Jeffrey & Co. (119) and by Scott, Cuthbertson, & Co. Carton-pierre is shown by Mr. J. M. Boekbinder (90r). We may add that the shafting for the machinery in motion was supplied and fixed by Messrs. R. H. Williams & Sons, of South Bermondsey.

Some well-known firms are absent from the list of exhibitors, owing, perhaps, to the want of a clear understanding as to the motives of the promoters of the exhibition.

HUNTSPILL CHURCH, SOMERSETSHIRE.

THIS exceedingly fine church, which some of our readers may remember was destroyed by fire within twelve months of restoration in 1878, has once again been renovated: and the works being complete, the edifice was re-opened on the 8th inst. by the Bishop of Bath and Wells. Huntspill Church, which is one of the finest Perpendicular edifices in the country, is situated in the low lands near the Bristol Channel coast, and some two miles from the town of Highbridge. It has a western tower, nave, and aisles, divided from each other by arcades of five lofty bays, a chancel, chancel-aisles, and a south-west porch. Fierce though the conflagration was, the walls of the structure and the arcades withstood the devouring element fairly well. The roofs and all internal fittings were of course totally consumed. The stone used in the building is the well-known Ham Hill stone. That is a cream-coloured material, but, in the present instance, the fire has burnt it a warm red, like Mansfield stone, and the effect obtained thereby is exceedingly happy. Following the course of the fire, the exterior of the building has not been interfered with, save, of course, that the new roofs, of somewhat flat pitch, have been covered in with red tiles. The interior of the church is very striking, and the roofs show a wealth of ornate woodwork. They spring from stone corbels, having angels, &c., carved upon them, and the hammer-beams all terminate with sculptured figures. Those in the chancel represent angels with wings uplifted, bearing musical instruments, and forming a celestial choir; whilst along the nave roof angels are carved in attitudes of prayer and devotion, and with their wings down in repose. The chancel wall-plates are enriched with pierced tracery and pateræ, and the various purlins and ribs have also carved pateræ at frequent intervals. In the nave wall-plates pateræ are introduced, and above is a continuous cresting of Tudor ornament. The aisle roofs being lean-to ones, are moulded and panelled, and stopped at the intersections by crow-footed bosses. Under the belfry the treatment, though larger, is somewhat similar, the belfry floors being panelled and ornamented by bosses. The internal stonework has been made good where necessary, the arcades and tower arch, all of which are particularly lofty and fine, have been carefully attended to, and a recumbent figure in the south aisle and the masonry and carved work around it have been renovated. The walls are stuccoed, and left the pleasant natural warm tint the local sand gives, and which harmonises particularly well with the surrounding stonework. The various avenues in the nave and aisles, and the floor under the tower, have been laid with Minton's tiles of ornamental design. The chancel rises one step of polished blue lias stone, and there are three more steps to surmount, in the same material, before the worshipper gains the sanctuary. The encaustic tiling in the chancel and sanctuary is exceedingly rich. The eastern window is a large five-light one, and in it has been placed a finely-painted production, by Messrs. Clayton & Bell, of London. The main portion of this represents the "Crucifixion," but other incidents in the life of our Lord, extending from the "Annunciation" to the "Ascension," are pictured therein. The most easterly window (a two-light one) in the south aisle, is also filled with painted glass by the same artists. The rest of the glazing is of cathedral tinted glass. The reredos is of red Corsehill stone, and consists, in the main, of seven continuous and groined arcades. The projecting ogee arches are crocketed, and have their finials running into the projecting cornice above; a pierced cresting surmounts the whole. Immediately over the projecting re-table of polished Devonshire marble are sculptured representations of the four evangelists, with alpha and omega in circles at either end; whilst forming pendent terminations to the arcade above are a row of flying cherubim. In the centre, and standing upon the re-table detached from the back, is a cross of pure white marble, having polished ends and standing upon three steps. Upon the altar-table also stand two unique old candlesticks. They are 3 ft. high, and are fine specimens of work of the character done some two hundred years ago. It is said that they originally belonged to Balliol College, Oxford. The altar-rails are of oak, upon standards of wrought-iron and brass. Within the sanctuary, on the south side, is an interesting old stone sedilia. In the blocked window opposite to this stood a large monument of blue lias stone. It was too much damaged by the fire to be repaired; so in its place a neat brass has been put, bearing a similar inscription to the original Latin one on the old tomb. This memorial was to one Gulielmus Fane, who died in 1679. The chancel and its aisles are divided by oak parclose screens, panelled and traceried, and having embattled and moulded cornices. The stalls are also of oak, as are all the fittings in the church. These stalls are particularly massive, and are richly carved. Their ends have canopied heads, terminating with carved poppy-heads, and are supported by pinnacled buttresses. They all contain figure-subjects, carved in high relief in the solid wood. The idea conveyed in the sculpture is of a company of angels teaching the village boys to sing. The book-board fronts are pierced in their upper parts with carved tracery, the lower panels being diapered. The benches in the main body of the church have square-headed ends, moulded and carved. The fronts and backs facing the avenues are framed with panels containing sunk tracery and carving, having crocketed and pinnacled mountings between them. The pulpit is an old Jacobean one of black oak, saved from the late fire, but not originally belonging to this church. It came

some years ago from Stogursey Church, in the same county. The organ was also saved, and has been renovated and refixed by Mr. Vowles, of Bristol. The six bells that were melted or smashed by falling at the time of the fire have been re-cast, and fixed in the original chamber by Mr. Taylor, of Loughborough. Removed from the neighbourhood of a town, and gas not being get-at-able, the church is well lighted by gasoline. This has been carried out by Mr. Felix Thomas, of Weston-super-Mare, who has also supplied the standards, which are brass, and triple lights. The heating apparatus is also by Mr. Thomas. The doors are all of English oak, with wrought-iron hinges. Under the tower stands the new font, in Norman style. It is circular, and of Portland stone, standing upon an octagonal step of blue lias stone, and is the gift of Sir Edmund Beckett, by whom, also, it has been designed. The stone reredos and the oak stalls are the work of Mr. Harry Hems, of Exeter, who has also carried out the stone and wood carving throughout the church generally. The contractors for the restoration were Messrs. Brock & Bruce, builders, Bristol. The work has been executed from the designs and under the immediate personal superintendence of Messrs. Hans Price & Wooler, architects, of Weston-super-Mare. Mr. James Bool, formerly of Bristol Cathedral, was the clerk of works. The present expenditure has been about 5,000*l*.

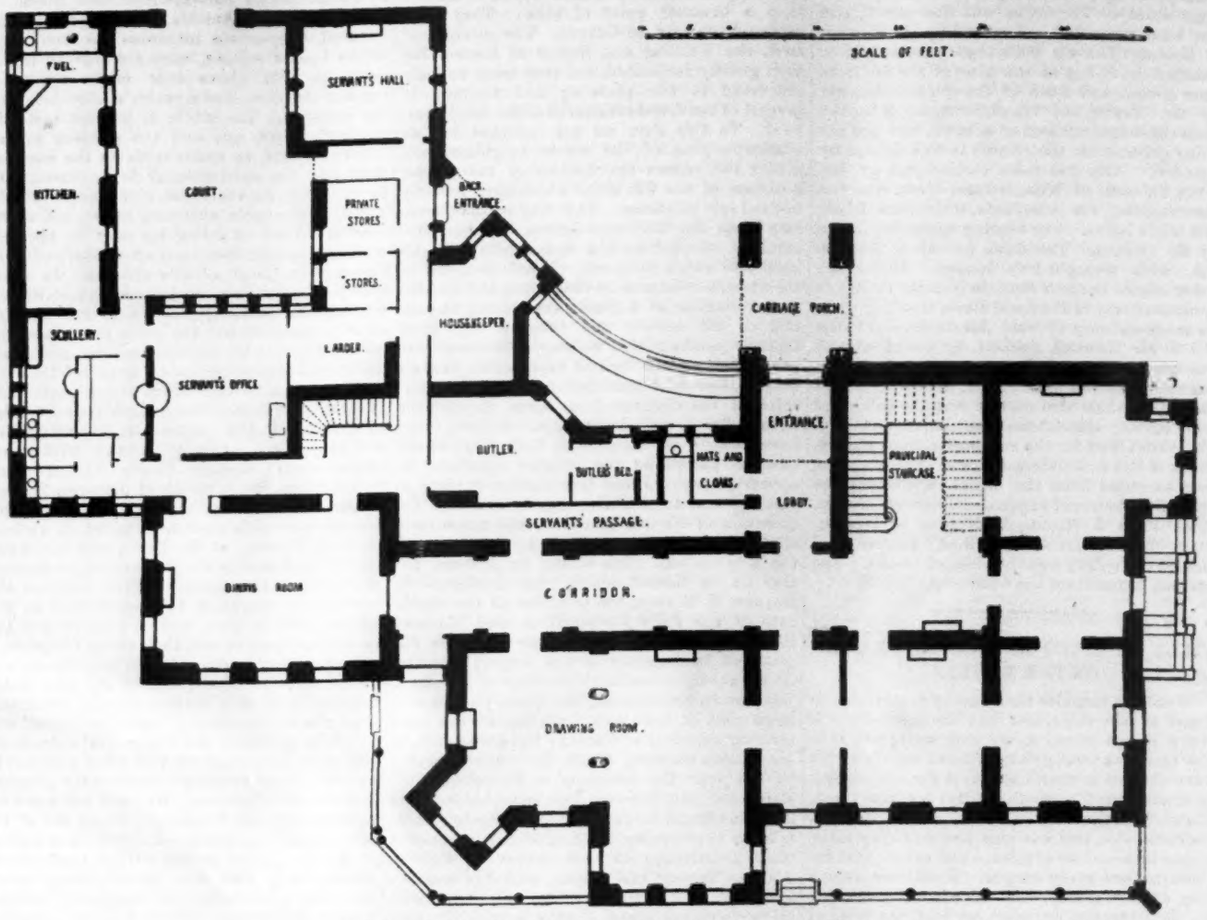
VILLA BUILDING AT CANNES, FRANCE: ON THE RIVIERA.

When we consider that Cannes is now able to boast of 525 villas, and that the town itself is but a recent creation, we may well place it in the first rank among those Riviera resorts which have afforded so excellent a field for the display of architectural ingenuity. But a century ago, the whole of this district was considered wild and impracticable, and was only frequented by those whose intense love of science and nature enabled them to face every danger. Prominent among men of this stamp, the celebrated naturalist, M. de Saussure, explored, on foot, the Estérel mountain range in 1787, and his enthusiasm at the discovery of many semi-tropical plants, together with objects of great geological interest, was considerably marred by the dangers and hardships of the road. The brigands had it all their own way; travellers were entirely at their mercy. The forests ran down to the edge of the sea, the land was uncultivated, and the whole district was infested with the convicts who had escaped from the pontoons of Toulon. Cannes was then a miserable hamlet, consisting of three streets, with houses in ruins, occupied by a few fishermen, and such it remained till 1831, when Lord Brougham, detained on his road to Naples by the Italian police, accidentally discovered that this exceptional spot offered all the climatic advantages which he had sought much further south. It did not take many years to transform the entire place. The bay lying at the foot of the ancient town was soon dotted with houses that were ultimately welded into a street. Not only was the entire bay of Cannes wedged in with new houses and villas, but these have now turned the corner of the Cap Croisette, and are skirting along the "Golfe de Juan." Nor is this all. The immediate neighbourhood of the sea was found too exciting for some patients: hence the somewhat contradictory theory was started that delicate persons were to come to the sea coast, but were not to live near the sea-shore. Thereupon villas were built inland, behind the two bays, which now constitute the front and the suburbs of the town of Cannes. The slope of the hills that shelter Cannes from the northerly winds is now dotted with pleasant residences, with *bijous* cottages, and huge sumptuous mansions. The freest scope is given to the imagination of the architect. The villas detached from one another, in many instances surrounded by large gardens, are thoroughly independent structures, and there is therefore no need of any regulations respecting uniformity of construction. The owners of land may build whatever they choose, and indulge the wildest fancies. Villa building at Cannes consequently affords special interest, particularly when we think of the enormous amount of work which has been done in a very short space of time, and for the part, if not with the assistance of Englishmen, at least with English money.

In reviewing the progress at Cannes, we should in justice recognise that what Lord Brougham has done socially for the town has been ably seconded by Messrs. Taylor & Riddett from a business point of view. They have rendered life easy at Cannes. The purchase of land, the building and letting of houses, has been greatly facilitated, and they were actively concerned in the planning and building of several of the finest residences of the neighbourhood. To this firm we are indebted for an admirable plan of the whole neighbourhood, giving the names and indicating the precise positions of the 525 villas which have recently budded into existence. This map is more accurate than the Ordnance survey, and has been officially adopted by the municipality for all legal and other purposes. It will be found of the utmost assistance to the visitor, and enabled us to recognise at a glance the general disposition of the streets and suburbs. We need scarcely point out that so much movement has occasioned a great deal of speculation, in some instances of wild speculation, in which, and in spite of the distance from home, Englishmen have taken a prominent part. Indeed, they have bought so much land, that there is one quarter known as the English quarter. It appears, however, that this district became so wealthy and fashionable that it attracted the attention of French investors, and these have silently, gradually, and little by little, bought the English out. The Comte de Padone, the Duc de la Rochefoucault, the Duchesse de Luynes, M. Moreau, the president of the syndicate of the Paris stockbrokers, and Madame Cromleez, a wealthy Belgian lady, are now the principal land-owners in the English quarter. At the other, or eastern, extremity of Cannes, a well-known Englishman, Mr. Scott, purchased a large plot of land and built one of the most striking mansions of Cannes; but here again, at Mr. Scott's untimely death, the whole property drifted into the hands of a Frenchman, M. Debionne. As, however, this remarkable estate is again offered for sale, and at a low price, there is a fair opportunity for Englishmen to reassert their prominence as land-owners at Cannes. All this buying and selling, and the wealthy character of the persons who establish themselves in villegiature at Cannes, have so increased the price of land, that in value it may well be compared with that of Paris or London. Thirty years ago the land was worth 80*l*. an acre, now the cheapest plots could scarcely be bought under 800*l*. the acre. Near to the railway station the land is estimated at no less than 200 francs the square mètre; while in the better parts of West Cannes, that is, in the English quarter, land for villa-building is sold for 50 francs a square mètre, or 8,000*l*. the acre. Yet in other spots, close at hand, but not quite so favoured by nature, perhaps not so well sheltered, the land may still be obtained for 18 francs the mètre. A recent issue of *La Semaine des Constructeurs* gives us the price that has actually been paid per square mètre for land recently purchased in and about Paris. Out of eighteen plots within the walls of Paris, three only were sold at more than 200 francs the mètre. These were in the Rue du Châteaubriand, 275 francs; in the Avenue MacMahon, 225 francs; and in the Avenue d'Essling, 216 francs,—all three situated, it will be seen, in the west end and English quarter of Paris. There were nine plots varying in price from 100 francs to 172 francs, and five below 50 francs, the square mètre: the cheapest of all being in the Avenue du Commandeur, and this was sold at 14 francs 10 centimes the square mètre. It will thus be seen that the price of land at Paris and at Cannes may very well be compared, and that there are properties as valuable in the one town as the other. This is a fact that would certainly not be conjectured by the casual visitor when contemplating the comparatively insignificant houses standing near the railway station at Cannes and comparing them with the magnificent palaces that ornament the neighbourhood of the Arc de Triomphe in Paris.

At Cannes the finest residences are removed from the centre, and stand out by themselves, prominently situated on the hill-sides, and well exposed to the sun. Many of these buildings are worth a visit, and first among them we we would recommend the Château-Scott, both on account of the structure itself and site, and also because it is open to public inspection. Visitors are only expected to leave their cards with the porter, and will naturally give a gratuity in keeping with the trouble they occasion. The château is situated to the east of Cannes, at a distance of about two miles from the centre of the town, and is approached by an admirable carriage-road that winds up from the route d'Antibes. As at present distributed, the estate measures no less than 36,388 square mètres, with the château in the centre, a villa above that might serve for stabling purposes, and a porter's lodge below at the entrance. The whole is planted and laid out with great art, and the gardens are as interesting and as remarkable as the mansion itself, and the carriage-road is so managed as to afford a great variety of views as we slowly ascend to the noble structure above, and whatever is missed in riding up may be seen by walking down the steep and straighter path that descends in front of the château. In these grounds flourish in profusion and in mid-winter, not only the ordinary plants that are familiar to us in England, but the palm, the yucca, the albe, the cactus, the Japanese medlar, and many other semi-tropical growths. It is here that the banana-tree, with its fruit ripening to perfection, is shown, and is considered one of the curiosities of Cannes. In this garden also, and in spite of the exceptional severity of the winter, we picked some splendid Gloire d'Dijon roses, in full bloom, in the middle of January. So well situated is the estate that, while innumerable flowers have this year been killed in various parts of Cannes, at St. Remo, and numerous other winter resorts along this coast, no damage was done to this garden. Every year, on the contrary, it increases in magnificence as the plants grow in size, and the palms and the eucalyptus trees extend their shady branches.

On the higher portion of the grounds there is an immense reservoir, fed by the pure water supplied from the Siagne Canal. From this point the whole estate is carefully watered and irrigated, and there are also several waterworks that may be turned on and off at a moment's notice. These constitute some of the principal features of the garden. We could not count the number of these fountains. Some are of the stereotyped description. A round basin, a group of children in the centre with a smaller basin above them, and the water falling round. Another, more natural in appearance, imitates a pond with stones and small rocks protruding here and there from the shallow water. Then we have a third and smoother surface of water known as "the mirror." In front of the château, there is a powerful water-spout, the water running down rocky steps to another fountain at a lower level. This seems to divide the garden in two, and the sparkle of the drops, the foam, and the rushing limpid stream add greatly to the brilliancy of the scene. To one side we found a great waterfall, and in another part of the garden a second prettier, but much smaller waterfall. Among the rock thus intercepting the waters a number of ferns and mosses live and prosper, which are not often seen in this dry climate. So much water adds considerably to the cheerfulness of the estate, maintains the coolness of the garden, and imparts a great variety and originality to the general appearance and the design of the grounds. But close at hand, and stretching for many hundred miles away, there are other waters which in their majesty and magnificence eclipse all these little efforts of human ingenuity. The glorious Mediterranean lies like an azure mirror at the foot of the hill on which the Château-Scott stands. In fact, while rendering full homage to the talents of the gardener, to the ingenuity with which the display of the waterworks has been contrived, and above all to the ability of the architect who designed the mansion itself, we must nevertheless recognise that the greatest charm of the Château-Scott is the incomparable view that can be obtained from its terraces, its windows, from every turning-point in the alleys of its garden, and, above all, from the summit of its tower. Here, stretching in front, the blue waters of the Mediterranean meet the horizon of the cloudless sky. The various tints of blue which are the glory of this sea may be contemplated with untiring admiration, while, close at hand, the château garden, with its flowers, fountains, waterfalls, greenery, the song of its birds, and the merry sound of carriages and pleasure-parties, hurrying along the high road, lend animation to the scene. Turning to the left, we at once lose the immensity of space and obtain in exchange the greatest variety of incident. The islands of St. Honoré and St. Marguerite stand out at sea, and we can trace all the indentures of the Juan gulph, with its palm-trees bending over the peaceful waters. Tapering out through the blue sea the fine point of La Croisette draws the extreme end



THE "CHÂTEAU-SCOTT," CANNES.—*Ground Plan.*

of the crescent that forms the Bay of Cannes. Through a mass of verdure, we detect here and there fine villas standing out in bright relief, and throwing back from their white stone walls the rays of the sun. These habitations become thicker and thicker till the eye recognises the spot where the central streets of Cannes are built, then the picture becomes more and more confused till suddenly there rises boldly against the sky, bathed in light, resplendent with tints of blue and green, and burnished red, the solemn chains of the eternal mountains. The view to the rear or north is of a more restricted character,—hill, lands, and woods, with the Château St. Michel standing proudly from the midst of an army of trees, but to the east the sublimest sight of all is obtained. There, raising their venerable snow-capped peaks to the heavens, the Maritime Alps recall all the grandeur of Switzerland. Here the effects of the sunset may be watched, reflected in blue, pink, and burning tints from the snow and ice-bound mountains. Closer at hand, as if the might of man was seeking to compare itself to the strength of Nature, the gloomy, threatening ironclads of the French Mediterranean fleet lie at anchor in the deeper and broader part of the gulph. The tricolour flies from the masts, the regular cadence of the oars beating the sea to bring the boats that hover round the fleet nearer to the shore,—these and many other signs of movement bring us back from the contemplation of the eternal hills to considerations of every-day life. But what a site for the raising of a mansion! It was a risky thing, with stones, bricks, and mortar, to attempt to compete on such a spot with nature.

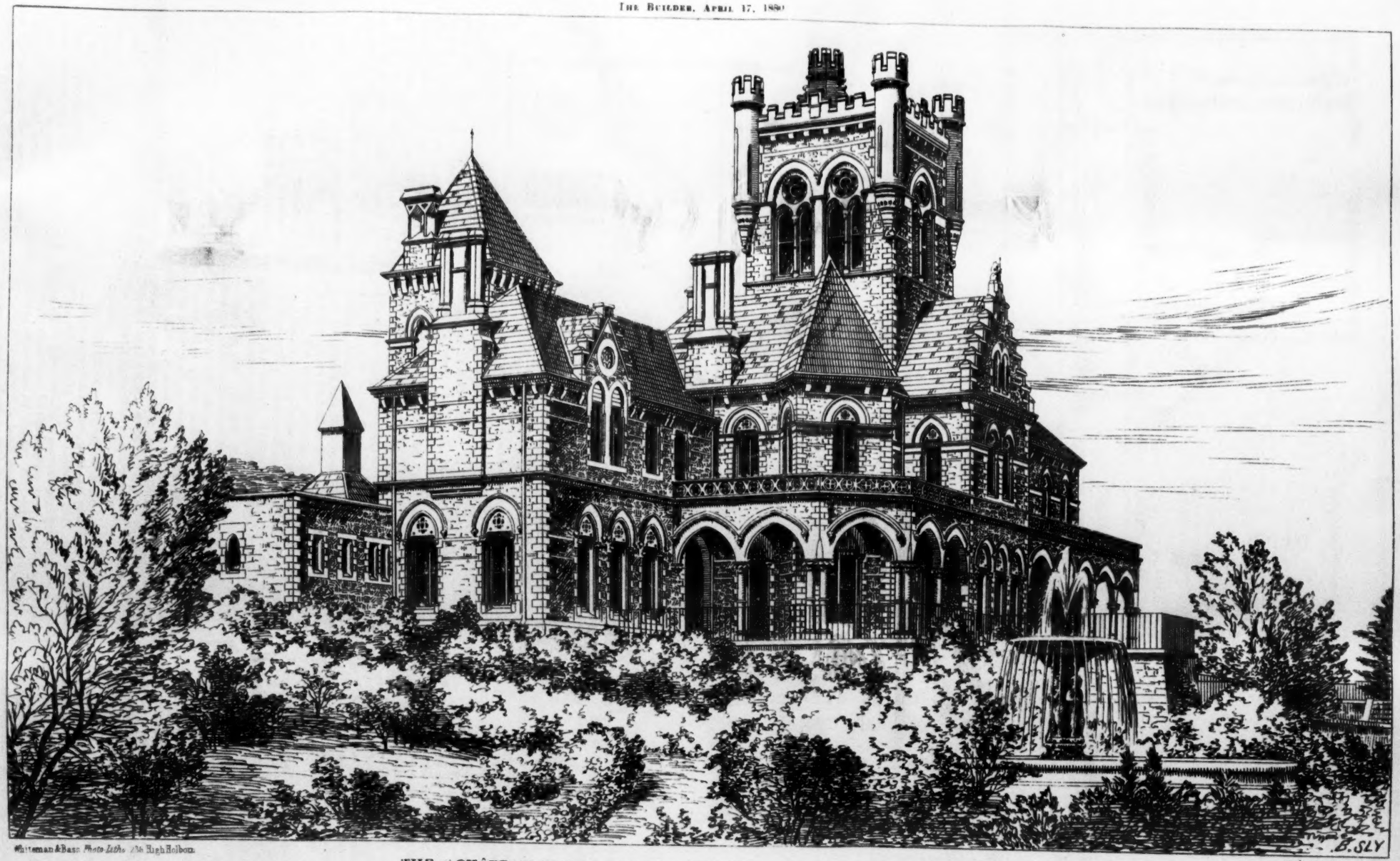
The credit of the attempt is due, we should at once note, to a fellow-countryman,—to Mr. T. T. Smith, the architect, who built Christ Church at Cannes, and to whom the Riviera is indebted for many of its elegant villas. Indeed, the Château St. Michel, which is close at hand, is also the work of the same architect. Far from being appalled by the grandeur of the scene around, the general design is made to correspond with the scenery and climate of the surroundings. The southern façade has, for instance, a serene aspect. Its covered gallery and colonnade, its balcony, its lofty tower, all seem to indicate wealth and prosperity. The northern façade is in keeping with its name. Here there are no arcades, no contrivances for giving shade. There are a certain number of windows to let in the northern light, but the building looks hard and strong. The north-west view is still more noticeable in this respect. It reminds us of the terrible wind, the Mistral, the scourge of Provence, which blows from the north-west, and which can, in its violence, overthrow horses and carriages, lift men from their feet, and sweep away every barrier. The apex of almost every angle in the building seems to have been brought to face the north-west, so that the wind will scarcely find a flat surface against which it can strike, but glides off harmlessly in some other direction. Thus, in spite of the numerous windows that light the château, there is scarcely one that faces the north-west. The whole view from this side is stern and forbidding, the entire château seems to stand on the defensive,—it is bristling with sharp points and angles that suggest the prows of so many ships facing a storm. Then a few steps bring us to the south-west aspect, and the change is as sudden as the changes of this marvellous climate. The whole building seems to burst out into laughter and smiles under the influence of the sun that shines here all day long. White colonnades, rosaces, windows innumerable, brilliant white stone carving and ornamentation mingle with the reddish hue of the stones of the Estérel used for the main portions of the wall, and reflect light and impart gaiety to the building.

The internal arrangements of the mansion are the most open to criticism, as is also the porter's lodge, which lacks in gracefulness, and seems stumpy and stunted. It is unnecessary, however, to enter upon this. In the drawing-room, pointed arches, supported by slender columns, form a striking division in this large room. There is a window over the fireplace, which permits a view of the garden beyond. The rooms are about 15 ft. in height. The dining-room is well contrived, so far as its proximity to the kitchen and the facilities of service are concerned, but it is rather small. This is even more the case as regards the kitchen itself. It is a long, narrow room, with a bad light, the windows being on one side only. What is most surprising, considering the scale of the mansion and estate, is the poverty-stricken appearance of various details. The mantelpieces are exceedingly small, plain, poor, and devoid of any artistic pretensions. The doors and locks, the wainscoting, the floors, and, in fact, all that appertains to house decoration, are meagre and out of keeping with the general scale of magnificence of the establishment. These, however, are all faults that can be remedied, and in whatever manner may best suit the furniture and individual taste of the occupant. All the essential points reflect the highest credit on the constructor and the architect. The masonry is of a very superior quality. Nothing has moved. The severest of winters has wrought no mischief. But there are certain sanitary details that might with advantage be investigated and improved.

We have lithographed a view of the château, made by our old assistant, Mr. Benjamin Sly, and add a plan of the ground-floor, and if the unsought and spontaneous advertisement which we have given of the property should by any chance prove serviceable to the owner, M. Debionne, he may consider it a return for the polite reception which he gave our representative.

VALUE OF FREEHOLD PROPERTY IN THAMES STREET.

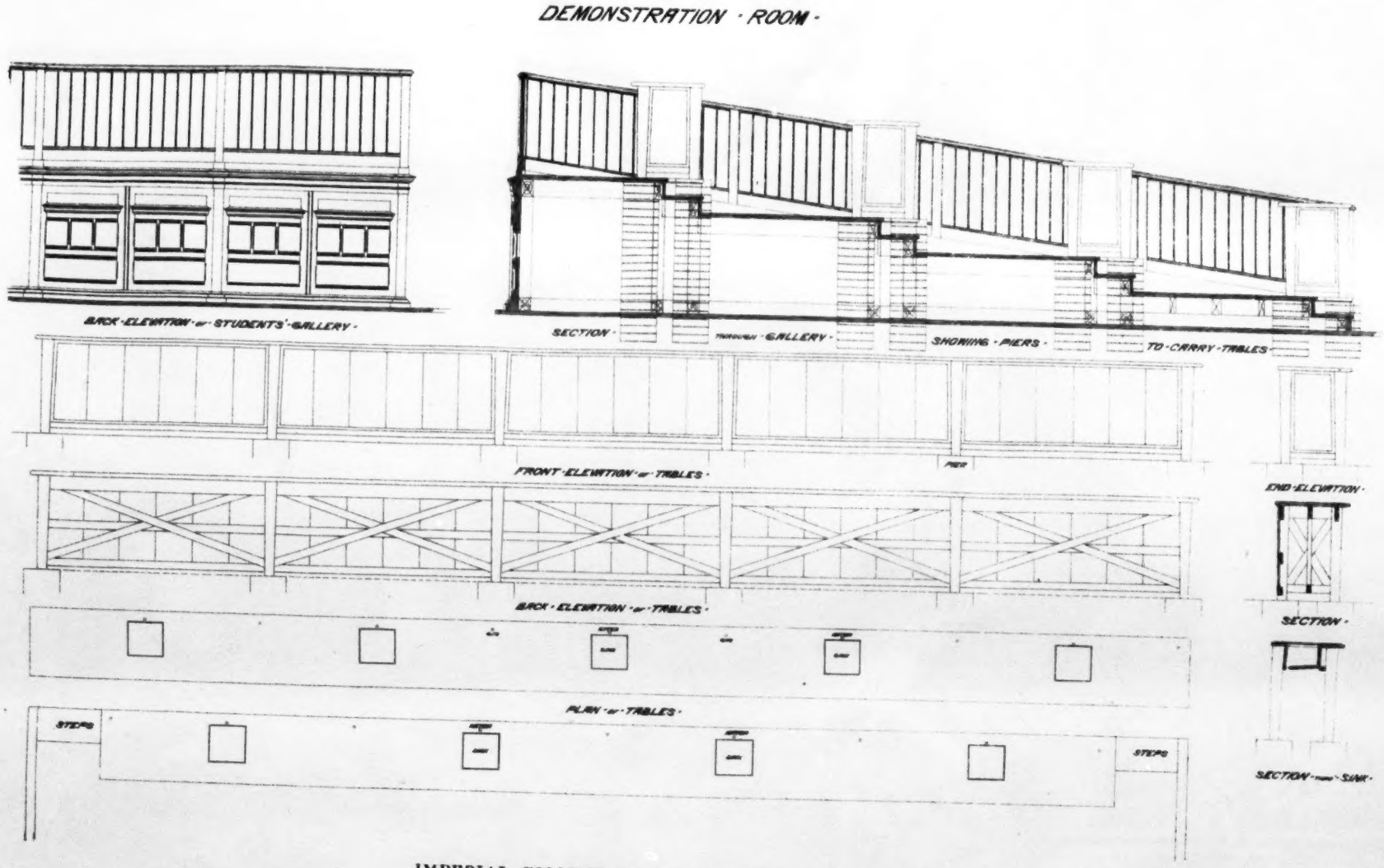
AMONGST other property offered for sale at the Auction Mart last week was a freehold property in Lower Thames-street, a short distance east of London Bridge. The property covers an area of 1,726 ft., and the building upon it, which has for several years been occupied as a wholesale fish establishment, is, it is stated, about to be taken down and rebuilt. There was a spirited competition for the property, which was ultimately sold for 6,000*l.*, being at the rate of about 3*l.* 10*s.* per foot.



Whiteman & Bass Photo Litho 176 High Holborn

THE "CHÂTEAU-SCOTT," CANNES, FRANCE.—Mr. T. T. Smith, Architect.

Printed by Wyman & Sons


DEMONSTRATION · ROOM ·
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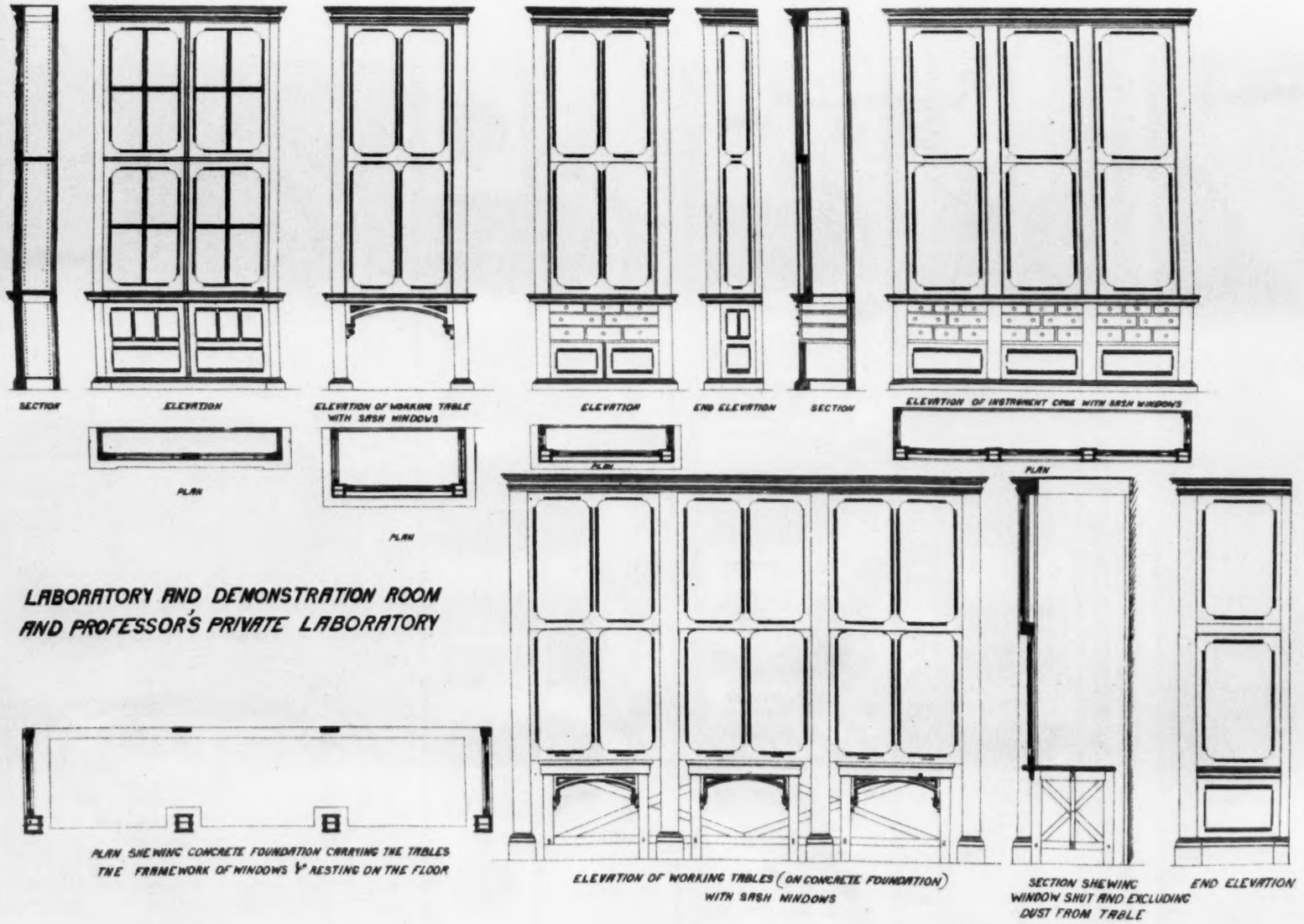
IMPERIAL COLLEGE OF ENGINEERING. YEDO, JAPAN.



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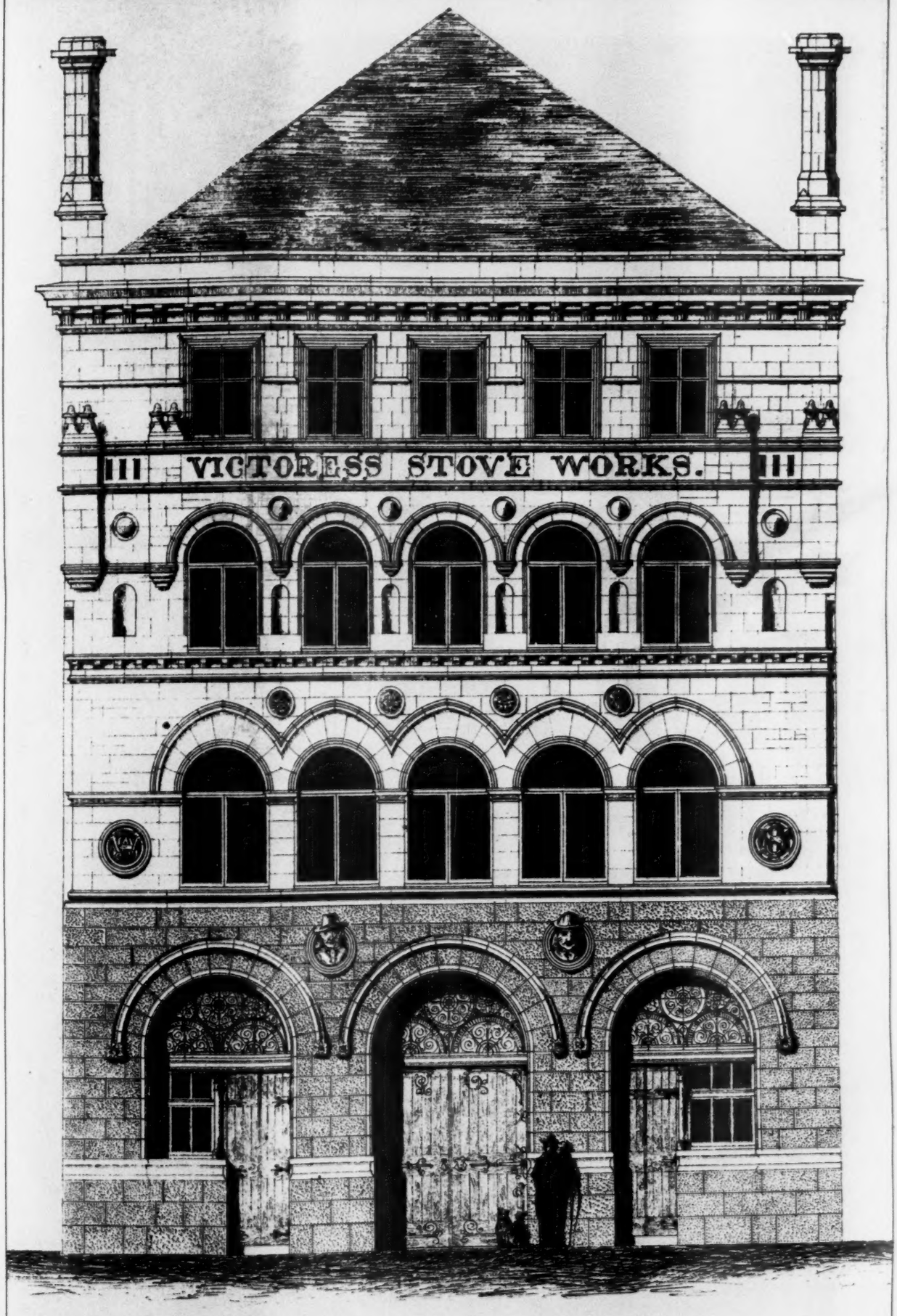
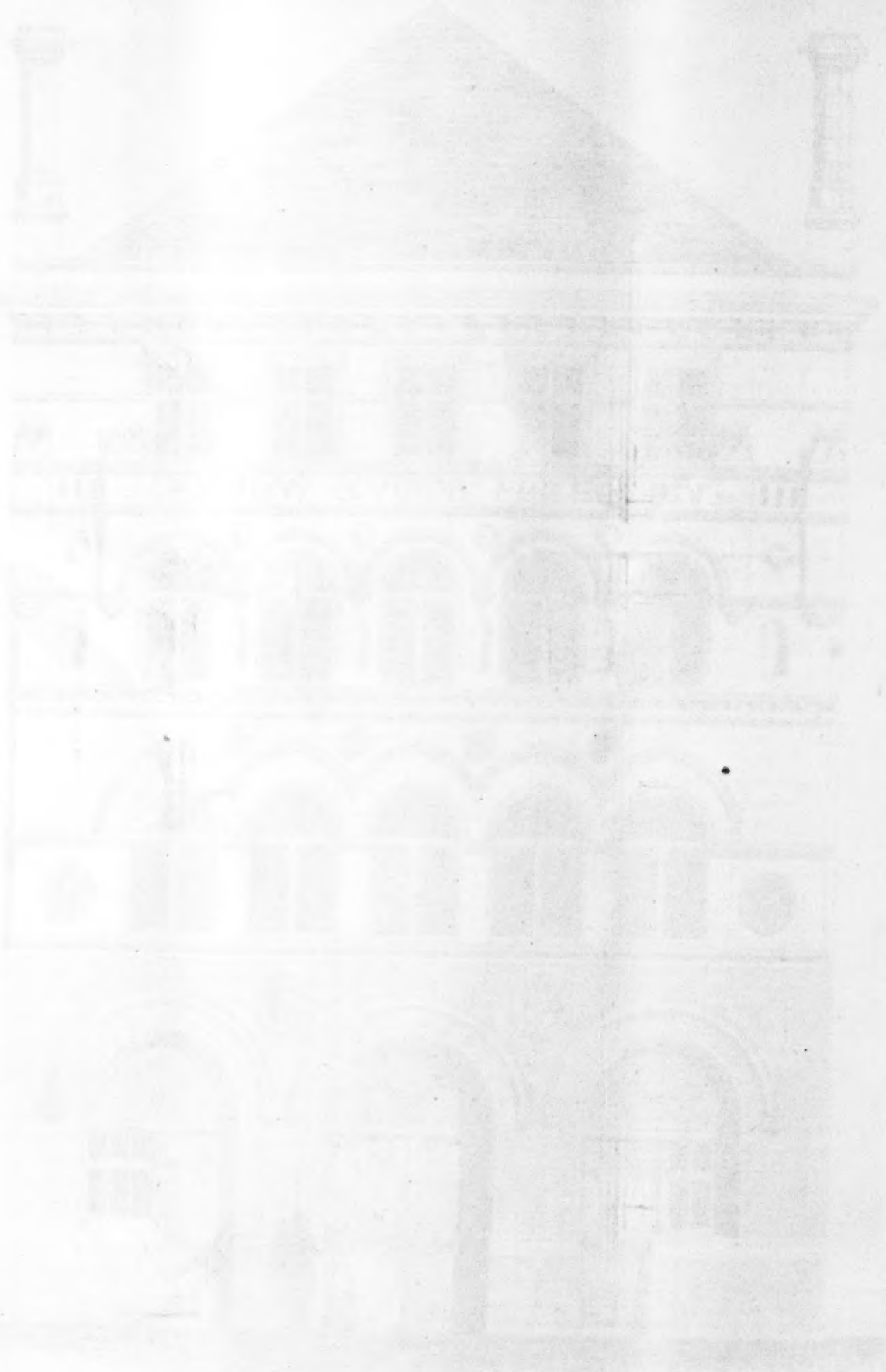
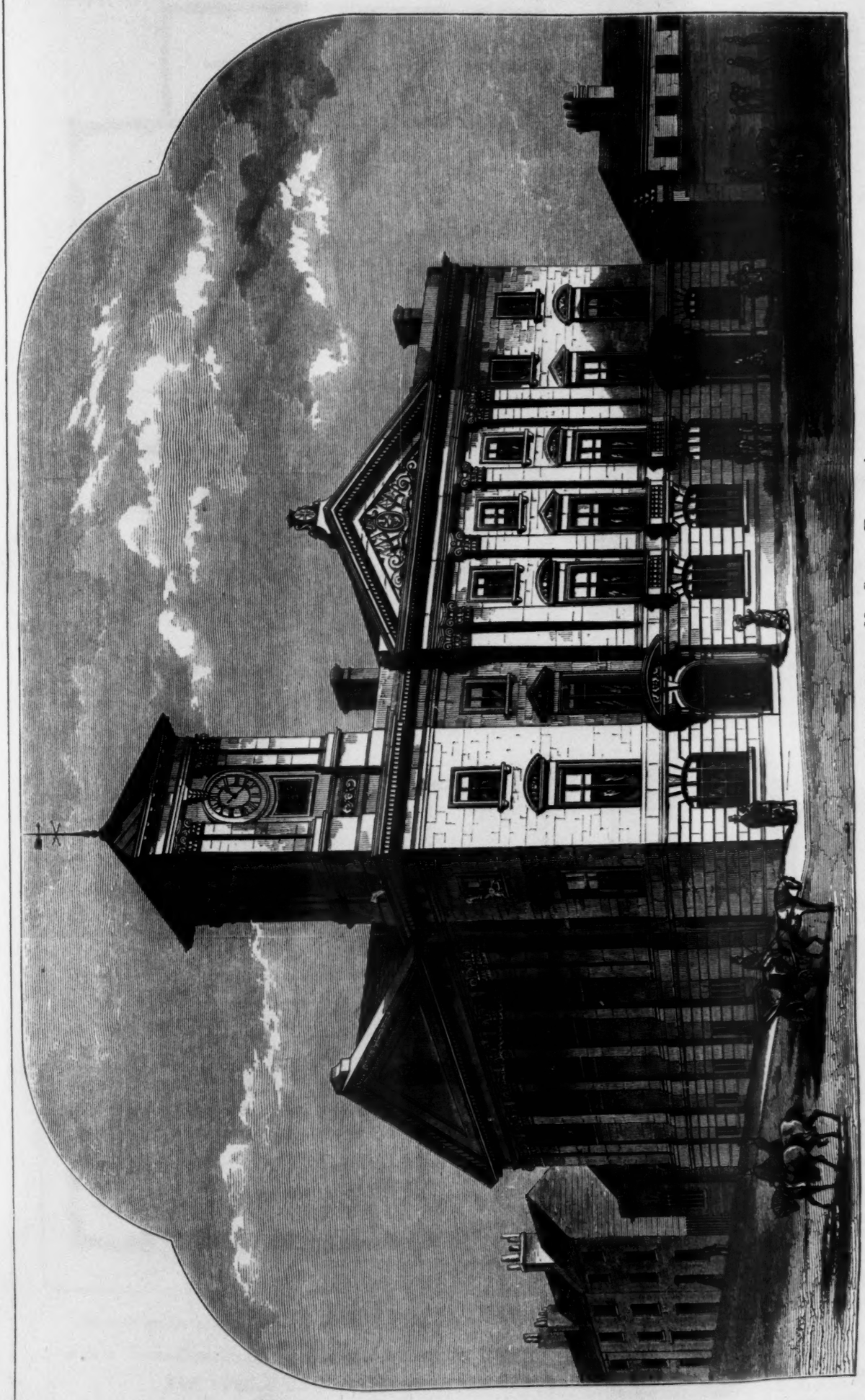
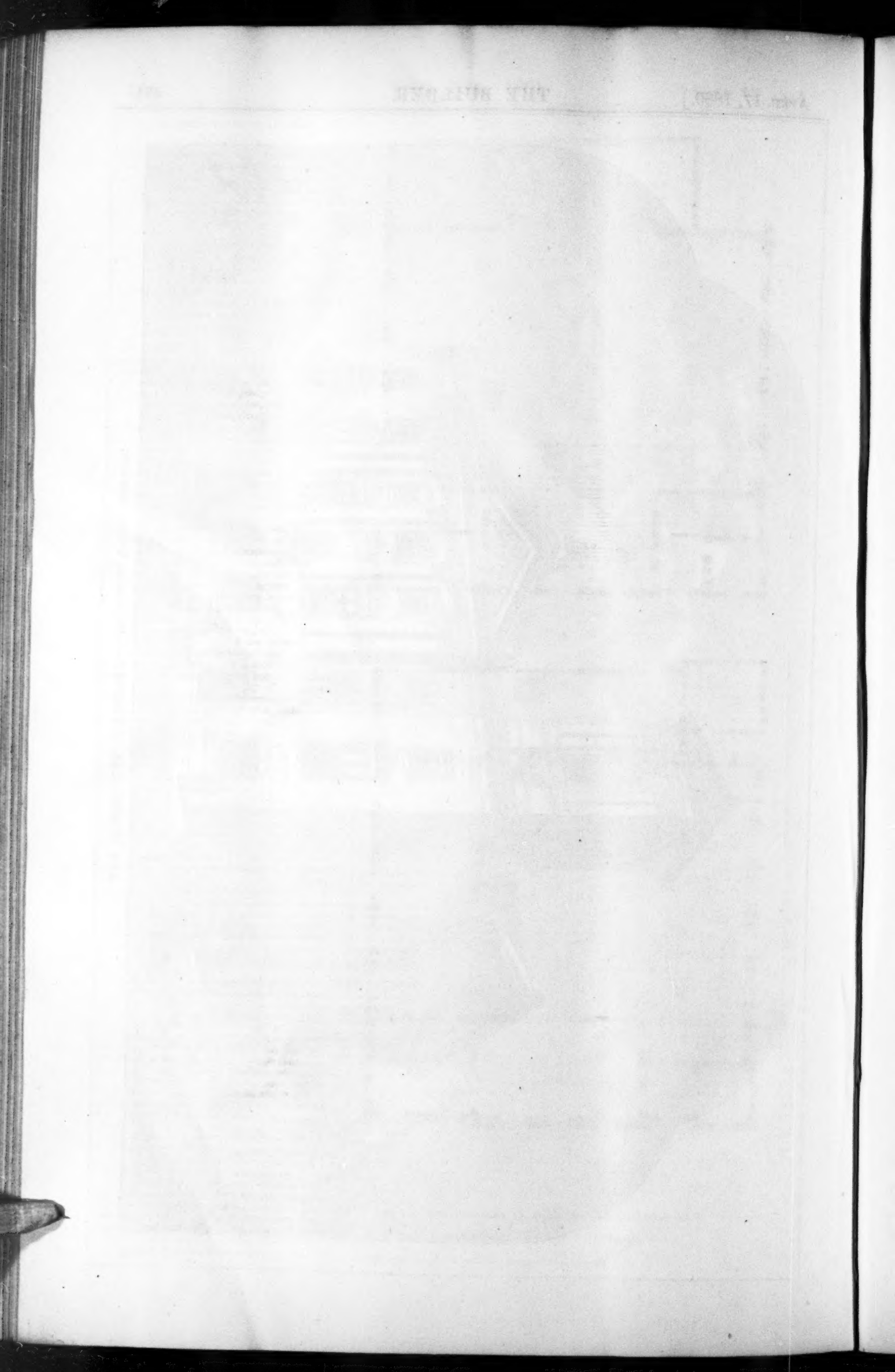


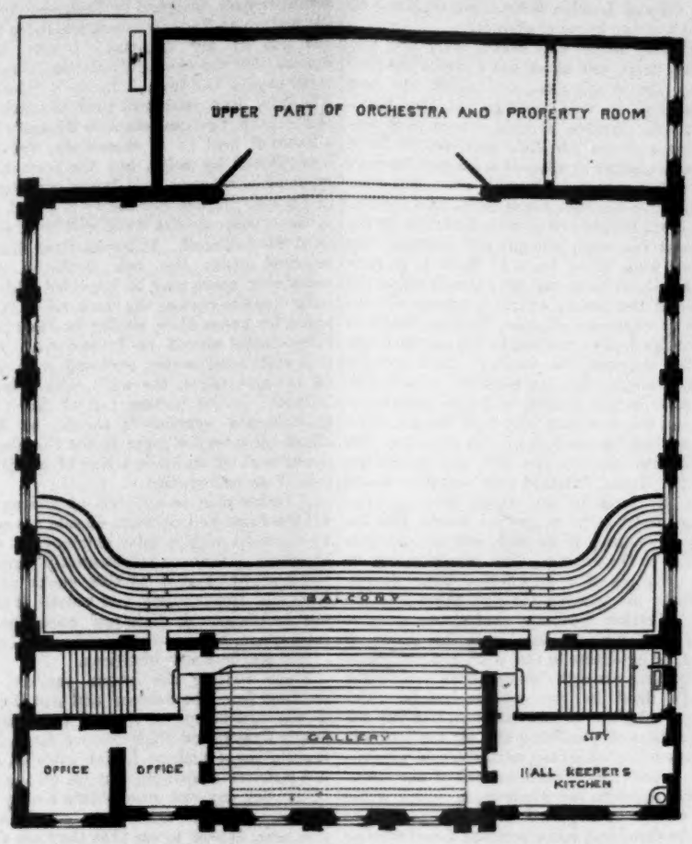
NEW WAREHOUSE IN GLASGOW.—Mr. Landless, Architect.



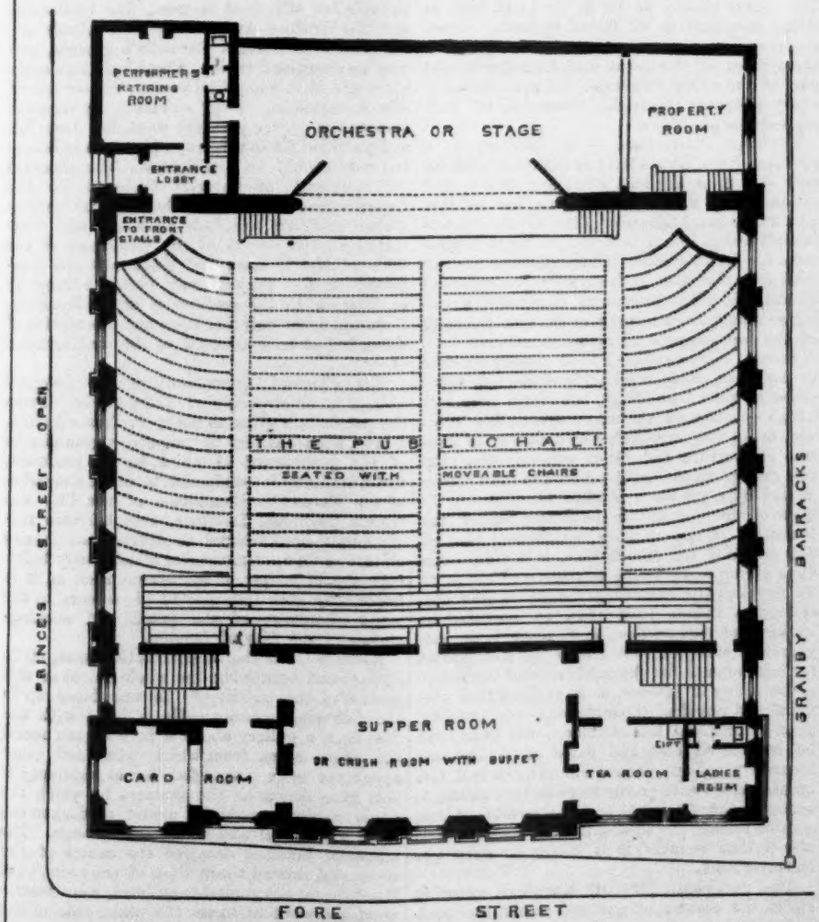


NEW PUBLIC HALL, DEVONPORT.—Mr. Samuel Knight, Architect.





PLAN OF UPPER FLOOR WITH BALCONY AND GALLERY



PLAN OF PRINCIPAL FLOOR AT LEVEL OF HALL

SCALE OF 10 0 10 20 30 40 50 60 70 FEET

NEW PUBLIC HALL, DEVONPORT.

NEW WAREHOUSE ERECTED IN GLASGOW.

In our present issue we publish the elevation of a warehouse lately erected in Glasgow for the firm of Smith & Wellstood, stove-makers, who, by the way, have a large establishment in Ludgate-hill. The new building consists of four stories and basement, each flat measuring about 115 ft. by 45 ft. The front is of stone, and is effective in appearance. The contractors were,—for masons' work, Mr. David Short; for joiners' work, Messrs. Hunter & Marshall; for brick-work, Messrs. Bell & Hornsby; for glass, Messrs. Mallooh; and for iron, Messrs. Law,—all of Glasgow. Mr. Landless, West George-street, Glasgow, was the architect.

PUBLIC HALL, DEVONPORT.

The selected design for the New Hall, Devonport, is about to be carried out, the arrangements for the site with the Government authorities having been completed, and we now give a view of the building as it will appear, together with plans of two floors. The architect is Mr. Samuel Knight, of Cornhill.

The whole ground-floor frontage in Fore-street is devoted to offices for rental, with a range of cellars or vaults accessible from Princes-street Ope also. Upon this basement is raised the public hall; the supper or crush room and buffet, card and tea rooms, &c., in connexion being on its level, above the offices in Fore-street; the caretaker's rooms and other offices are on a still higher story on the balcony and gallery levels. At the upper end of Princes-street Ope is another entrance to the hall, with convenient retiring-rooms for performers and others.

The Public Hall is 100 ft. long, 67 ft. wide, and 47 ft. high; its width being two-thirds of its length. The platform or stage, for orchestra or performers, 42 ft. wide, is placed within an arched proscenium in the centre of the north side of the hall, the auditorium arranged facing it, by which means all parts of the area are brought within easy distance for sight or sound. One long balcony on the south side faces the stage; and in the centre behind it is a large gallery carried over the ceiling of the supper-room.

The hall is provided with four public entrances, two chief ones in Fore-street, other two in Princes-street Ope, besides one in private passage on the east side. The staircases and landings are fireproof, of stone, and winders and open well-holes have been avoided. The hall is lighted by day by ten large windows, five at each end of the room. At night the lighting would be by sun-burners, one large central burner, with two lesser burners on each side.

It is proposed to seat the area on occasion of performances with chairs, disposed as shown by dotted lines. The following is the seated accommodation, 2 ft. 6 in. by 1 ft. 6 in. for each seat, viz.:—Hall floor in chairs, 1,174; raised seats at back, 212; balcony, 366; gallery, 278; total, 2,030.

Upon the general level with the public hall, on the first floor fronting Fore-street, is a spacious central room, 43 ft. by 27 ft., and 15 ft. high, available as a supper-room at balls; as a crush-room, with buffet for refreshments at theatrical and other performances, and a convenient room for smaller public meetings.

The architect estimates that, at the lowest calculation, an income should be obtained from letting the offices and vaults as follows:—Six offices on the ground floor, at 20*l.* per annum, 120*l.*; four ranges of vaults, do., 80*l.*; two offices on the second floor, at 10*l.* per annum, 20*l.*; total, 220*l.* (this estimate is considered by the committee as too low); fireproof safe-rooms in addition, and whatever may be obtained from the available club and other rooms on the upper floor.

The style adopted is Italian. The walls will be constructed of local limestone, stuccoed externally in Portland cement, in accordance with the instructions given to competitors.

The roof of the public hall will be carried upon eight wrought-iron trusses, supporting the timber framework for the covering and ceiling.

In the original instructions the committee limited their proposed expenditure at first to 10,000*l.*, but left it to the competitors to show any increased occupation of the site and state the extra cost necessary. Mr. Knight (with others) acted upon this, and showed a complete design, and estimated it at from 12,000*l.* to 13,000*l.* The committee, however, fancied it

could be accomplished for the 10,000*l.* Quantities were taken out by a local surveyor, with the result that of fifteen tenders the highest was under the 10,000*l.*

The tender of Mr. Matcham, of Plymouth, of 8,100*l.* for the complete work has been accepted, and the total expenditure will thus be kept within the committee's first proposal of 10,000*l.*

BUILDINGS FOR SECONDARY EDUCATIONAL PURPOSES.*

PART II.

I now proceed to consider the second formal division of my subject, viz., the particular planning of the parts; but I fear the time at my disposal will necessitate a very limited discussion of the details.

The Lavatory and Cloak-rooms.—Every school is, or ought to be, entered through the hat and cloak rooms, and the most convenient mode of retirement should also be by the same route, supposing always that the cloak-room does not form a separate adjunct to each class-room, as in the case of the City of London School. In this design I endeavoured to realise the expressed wishes of the head-master, and arranged for the boys' entry into the cloak-room on one side of each class-room, and out at the other, the custom at the dismission being for the master to order the boys to file off from their class-seats into the cloak-room, and enter again by another door to their seats, with the hats and coats with them. When all are ready the order is given to leave. In this way the loss of clothes is prevented. But the better plan is to have separate cloak-rooms, which may be heated and ventilated quite independently of the class-room, and the cloaks may also be dried by hot-water pipes as they hang, or if very wet, taken to the drying-room. One of the most complete cloak-rooms, as well as the most extensive, in a boys' school of this kind, is that of Cowper-street School, Finsbury. And, I am sorry to say, about the worst are those provided in Board schools, where, if anywhere, it surely is most necessary to avoid the transmission of disease and other evils, by providing cloak-rooms of sufficient size, and not, as is most common, having two or more rows of pegs over each other, so that the garments hang one upon another; but the outcry against expenditure in Board schools will, doubtless, make it difficult to improve in this respect. In secondary schools, however, this ought not so to be, and yet it is the commonist sin in the most elaborate and expensive buildings in other respects, and not less in girls' than in boys' schools.

The provision made in the North London and Camden Schools is as economical as it is efficient, and the plan is this:—The cloak-rooms are situated in the basement, and consists of a series of rooms the same size as the class-rooms above them, surrounded on all sides with a single row of pegs, not less than 9 inches apart, a shoe-rack, and umbrella-hook, with continuous metal water-channels, made movable in short lengths. A screen down the centre gives space for a similar arrangement on either side; hot-water pipes pass under each screen, above the floor; between the rows forms are placed for the girls to take off their walking-shoes; and every peg is numbered, and every pupil has her number.

The lavatories are situated in the cloak-rooms, and the external conveniences are entered from the cloak-room; so that every arrangement is open to inspection, and under the control of the teachers on duty in each room. Some teachers prefer to keep the lavatories and conveniences separate from the cloak-rooms, so that the cloak-rooms may be locked up during school hours.

In boarding-schools it is usual to provide closets and doors with looking-glasses in the upper panels, &c.; but, in all cases, plenty of room is essential to the discipline and *morale* of the school.

The Class-rooms.—The arrangement of the class-rooms is one of the most important of the parts. The number of scholars varies with the system of classification adopted.

The Public Day-school Company prefer from 20 to 25 in a class; the North London Collegiate School, for the higher education, apportions 30 to a class; the Camden School has classes of 50; a common number is 40, which is that adopted at the City of London School, but 60 is not an unusual number in great schools.

Continuous forms and desks, four, five, and six rows deep, are usual, but I prefer the dual desk to the continuous, and think the best arrangement is that adopted at the North London and Camden Schools, where each student has a single Swedish desk, set 15 in. or 16 in. apart, so as to allow of a passage between each from front to back; the rows will then need no space between them from side to side, but a 2 ft. passage or more is desirable at the sides next the wall, though not essential, the resulting area being from 12 ft. to 15 ft. each scholar. In all cases the light should fall on the left side of the desks; and, if the rooms are not heated by warm-water pipes, the fires should be opposite the desks; and not in the centre of the wall, but between the teacher's desk and the entrance-door, so that the teacher's raised desk may stand in the centre, and the draught, if any, from the door may only feed the fire, without annoying the teacher or the students. On the opposite side to the fire, and behind the students' desks, vitiated-air extract-shafts should be built in the walls, with a large grating fitted with a gas jet inside, and the means of closing, if desired, one at each side and close to the ceiling. The stoves should be on the principle of Boyd's School Board Stoves, with fresh air passing through them into the room. Further fresh-air shafts, on what is known as Tobin's system, may be added, if desired, or by shafts in the wall, under window-sills, opening through hit-and-miss ventilating gratings fixed in the window-boards. The latter is adopted at Sandall-road, but has the disadvantage of admitting the air too low, and the descending cooler air, next the cold window-panes, checks the upward current of the inlets. The wall opposite the windows, in which is the door, should be supplied with a large fanlight over the door, and corresponding dwarf window openings in the upper part of the wall, so that cross ventilation may be obtained at pleasure, and particularly in the intervals of teaching. The rooms should be 13 ft. or 14 ft. high, as wisely required in all Board Schools. Class-rooms so designed and arranged on one, two, or three sides of the great hall, form the largest part of the school-buildings, and are adapted to every purpose required. Examples of such class-rooms are given.

Drawing Class-rooms. — In addition to a northern light, a high light is desirable; and not only so, but a skylight also; and this is best attained by a curved roof, similar to that adopted at the Gloucester Fine Art School, and to that which I have built for the North London School. In this case, I have formed the roof with iron ribs and sash-bars on one side, and glazed it like a conservatory, lining with boarding so much of the interior as the circumstances of the case required by actual experiment.

Science Class-rooms.—I have already referred to the great changes which have recently taken place in school buildings, the single lofty hall, which constituted the whole school fifty years ago, being now superseded by a variety of separate class-rooms and other conveniences. But this change in the architecture has been accompanied by a yet more marked revolution in the mode of teaching, and in the matter taught. The education of the memory, which was all that was provided for our fathers, is in these latter days giving place to the education of the mind. To develop the reasoning faculty is now considered a nobler task than to manufacture walking encyclopædias, and, since it is now generally accepted that one of the most powerful instruments for the cultivation of the reason is the study of science, it is evident that chemical and physical laboratories,—and, possibly, even mechanical laboratories,—will henceforth be considered essential parts of a first-rate secondary school. These laboratories will also be associated with one or more lecture-rooms, to accommodate from 100 to 400 students, or from a third to half the school, if not exceeding 800; above that number, it is better to have two lecture-rooms.

The particular form of chemical operating stalls, the service of gas and water, the sand-baths, and the fume-closets, are illustrated in drawings on the walls, and may be further studied by reference to the published illustration of the admirable laboraties at Owens' College, Manchester; but, as I am not aware that similar publicity has been given to physical laboratory fittings, I have exhibited on the walls a few illustrations of the very clever arrangements designed by Professor Ayrton for the college at Yedo in Japan, which his kindness has put at my disposal. I may, however, remark that the chemical laboratory operating-stall should be from 3 ft. to 4 ft. wide, and 2 ft. 3 in. deep, with two tiers of bottle-shelves at the back, two gas jets with Bunsen's burners, a bason of lead or of stoneware; the latter is less effected by acids, but the former is easily repaired or renewed, and fewer breakages occur in its use. If the laboratory is small, one sink in the corner, or next walls, will be all-sufficient, as at Sandall-road. Different-sized drawers are required under the oak table-top, and the remaining space may be provided with shelves, with doors to enclose the same, set back to allow space for knees when sitting at the stall. The fume-closets should be formed with lead-lined sink and closet under, enclosed with panelling (if not recessed in the wall), with rising sashes in front; in the bottom rail of the lower sash hit-and-miss ventilators should be fixed, to admit air from the room to the chamber, at the upper part of which is a ring of gas-jets at the foot of an extract-flue.

A better plan is adopted at Owens College. All the fume and exhaust closets are connected by channels with a lofty chimney, at the base of which a furnace is constantly burning, and the draught created by this sucks up the air from the fume-closets, and carries it far above the buildings. A directors' room, best apparatus-room, balance-room, and special operation rooms are desirable additions.

Since writing the above passage, I have received from the Science and Art Department of the Committee of Council on Education at South Kensington their science form, No. 1013, descriptive of fittings for laboratories, and with it a series of drawings; but as, on the payment of 1*s.* 6*d.*, any one may obtain a copy of these documents, I will not detain you by a description now, except to say that they are the result of much deliberation, and practical experience has proved their value. The Royal Institute at Hull is fitted up with these fittings, which are suitable for advanced classes. The Gloucester and the Watford Art and Science schools are illustrated in Colonel Donnelly's reports, and may be consulted there. These buildings aptly illustrate what is required to complete secondary school buildings. Their existence as separate institutions proves that the want has been felt and provided for in this way; in future buildings the want should be anticipated. The chemical and physical laboratories designed for the Cowper-street Technical School of the London Guilds Institute are fully described and illustrated in the report of the Governors of the 10th of March last; and since any one interested in the subject may obtain a copy on application to the secretaries of the Institute, I abstain from entering upon any description of them, but at once proceed to the consideration of,—

The Physical Department of the Imperial College of Engineering at Yedo, Japan.—From the particulars given to me by Professor Ayrton, I have been enabled to prepare a ground-plan of the department of which he was professor, and it is no small satisfaction to me, as a member of the Executive Committee of the City and Guilds Technical Institute, that his able services have been secured to develop the physics classes at Cowper-street, for which costly buildings are in course of realisation, such as it is hoped may give full play to his talents, to the great advantage of the youth and working-classes of the City of London.

Room No. 1 is the demonstration-room, 50 ft. square, and occupying the whole height of this portion of the building.* It was fitted up in the following manner:—On a level with the first floor, a gallery about 3 ft. wide ran round the whole room, from which wires and other apparatus were suspended for experiment; it also gave access to the shutters by which the upper windows could be closed to darken the room for optical and other experiments. The students' benches occupied the centre of the room, and around three sides of the room, next the walls on the ground-floor level, were instrument and working cases, the under-side of the gallery being utilised for cupboards, entered from behind.

Room No. 2 is the general laboratory, fitted up with instrument cases, covered in working-cases, the tables being on concrete foundations, and uncovered instrument cases on brick piers.

* By Mr. E. C. Robins, F.S.A. See p. 437, *ante*.

* See our last number. Other illustrations are given in our present issue.

Room No. 3 is the Professor's private room and private laboratory.

Room No. 4 is the instrument-room.

Rooms Nos. 5 and 6 are for electrical experiments, No. 5 being fitted up with six brick pillars, each about 2 ft. square, and descending 6 ft. into the ground. No. 6 has long tables on brick piers.

Room No. 7 is the lavatory attached to the laboratory, for washing bottles, &c.

Room No. 8 is a small, artificially-dried room, in which experiments with frictional electricity could be conveniently performed.

On the first-floor, which extended over all but the demonstration-room, were rooms for experiments on light, a small class-room for the teaching of applied physics, rooms for special experiments, store-closets, and the battery-room. The detail drawings, which I have had prepared from those made by Professor Ayrton, are exceedingly interesting and valuable on account of their originality, and because they have stood the test of use in the college at Yedo.

Fittings in Demonstration-room.—The sloping platform, or students' gallery, is shown on the drawings, and in the side sectional view I have indicated in dotted lines the brick piers which sustain the students' tables distinct from the general flooring, so as to be quite free from vibration. There is also a front, back, and top view of the students' benches, and a section showing sinks and gas-fittings. By this special arrangement of students' benches (which is believed to be unique of its kind), it was possible for the students, without leaving their places, to repeat the experiments made by the Professor during the lecture, with apparatus placed ready for them on these firm benches. Between the lectures, these benches or tables could be utilised as part of the laboratory proper.

Illustrations are also given of the instrument cases, with folding-doors and glass panels, as arranged around a portion of the demonstrating-room, which are also used in the laboratory.

Details are shown of the Professor's lecture-table in this room, resting on a platform, the whole of which was sustained on a concrete foundation distinct from the general flooring, and its fittings include a pneumatic trough sink.

Fittings in the Laboratory.—Besides the instrument cases, the drawings also exhibit the working cases, furnished with glazed sash windows, as used in the general laboratory and in the Professor's private laboratory. The tables in the cases rested on a concrete foundation, quite distinct from the flooring, to avoid the transmission of vibrations; so that, except where the sash was closed, after work, to exclude dust or meddling fingers, no part of the case rested on the table, there being no connexion between the table carrying the apparatus and the floor, on which rested the sash-frames and glazed inclosure, and on which the experimenter stood. With such working cases a delicate investigation could be carried on from day to day, the apparatus being always ready whenever the experimenter had leisure to work at it. Some of the working cases, so enclosed and fitted with window-sashes to exclude dust, &c., not being required for very delicate experiments likely to be spoiled by small vibrations, stood upon the common floor, without concrete foundations. There is the charm of novelty in these arrangements, so far as I know, and of the following fittings for the battery-room.

Battery-room.—Illustrations are given of these designs as carried out in the aforesaid Technical College of Yeddo, under Professor Ayrton's direction. Accommodation was provided for about 200 Grove's cells and 300 Daniell's, used for general electrical work and for the electrical testing of the students of telegraph engineering. The peculiarity of these special fittings was that all the cells were under glazed covers, and, therefore, dust was excluded; yet all the cells were visible, and all obnoxious gases were led up the flues; the cells were easily got at by opening any portion of the double-hinged cover. When taking a Grove's battery apart, after use, the zincs were put at once into the long, narrow leaden sink, immediately in front of the battery-stand; and the porous cells to soak in the long leaden sinks immediately behind the operator. After soaking, the porous cells were put on the racks to dry, and were ready for use within reach of the operator putting up the battery on the next occasion.

Of Professor Ayrton's drawings I have seen ten, and of these I have chosen the most interesting examples. It is to be observed that the fittings of the physical department at Yedo were contrived to enable the students to learn by advancing the bounds of knowledge, and not merely by assimilating existing information, as is evidenced by numerous published accounts of original research conducted in that laboratory; and it is this method of teaching which has given to Professor Ayrton the *prestige* which he enjoys.

Now, I trust that I have not wearied you already, but I was anxious to take this opportunity to give publicity to a series of very ingenious contrivances, which I hope one day to see more or less realised in the higher class secondary schools of the country. The need of technical knowledge, based on scientific principles, is daily becoming more apparent, and our secondary school teachers will find it to their own interest, no less than that of the middle classes generally, to give increasing attention to it.

In conclusion, while thanking you for the patient hearing you have given me, let me express a hope that buildings for secondary educational purposes will no longer be considered unimportant accessories to the fuller development of the teaching power of the master, and the acquiring capabilities of the students, and whether the authority of Government is applied to the removal of the present inconsistencies or not, that the good sense of the English people will in this, as in most other things upon which it exercises independent thought, achieve its own emancipation from the thraldom of habitual apathy and contented submission to things as it commonly finds them.

In the course of the discussion which followed,

Mr. J. G. Fitch said that architects generally considered it sufficient if they provided a seat at a desk for every scholar; they built upon the theory that that was the scholar's place, and that he would seldom leave that seat; but his own feeling was that, in order to keep up the intellectual life and animation of a school, it was desirable that at least one lesson out of every three or four should be given standing. It was not desirable that children should remain seated during the whole of the time, and, therefore, he hoped that, in planning class-rooms, architects would remember that it was not wise to fill them up with desks, so as not to leave room for the scholars to take one lesson while standing. There was a great contention as to the character of the desks, whether they should be long continuous desks, dual desks,—like those adopted by the School Board,—or Swedish desks, in which the children had each a separate seat, like a chair. He was not going to try to settle this question, but he hoped those that did try would bear in mind that the comfort of the teacher in teaching had to be considered as well as the comfort of the scholar in sitting. The more you scattered the scholars over a wide area, the more you increased the difficulty of a teacher in getting the class into a proper focus. That seemed to be a great objection to the arrangements as proposed, because if the scholars were spread over too wide an area, the teacher could not teach effectively without a trying expenditure of voice. No doubt class-rooms should be in the main isolated from each other, and if the class consisted of thirty scholars, it was well that the teacher should have them all to himself; but he would remind the architects that there were some lessons which could be given with advantage to two classes at the same time, and therefore it would be as well to have the class-rooms separated by a movable partition.

Mr. C. Mast thought that too much attention was paid to large schools, to the neglect of the smaller ones, in which the greater part of secondary education was taught. He hoped that the system of designing large schools would not be extended, because he believed that the grouping of a great number of children under one roof was a bad plan.

Mr. Roger Smith said he could not add much to the careful account which had been given of school buildings, as they were being designed and erected now; but speaking as an architect, it struck him that a good deal was being done to give to buildings that kind of adaptation to the requirements of modern tuition which Mr. Fitch pointed out was necessary, and which he hinted architects hardly thought of sufficiently. But there was nothing which an architect was so pleased to get as the ideas of the person for whom he was building, and a definite account of the requirements to be met. The difficulty was not so much to provide for the requirements as to ascertain them thoroughly and consistently. He was glad to hear the advocacy which Mr. Robins gave to the system of class-rooms clustering round a central hall, without that abomination called a corridor; and he felt sure that a great many schools, even those for primary education, would be built on the improved system, and the number of class-rooms increased. There were one or two points with regard to class-rooms which it might be desirable to dwell upon, not that they would be overlooked by men engaged in the construction of schools, but because upon occasions like the present hints might be thrown out which would bear fruit hereafter. Nothing should be neglected to make the class-room as good for its purpose as possible, and it should be made easy to hear and speak in. A perfectly square room was convenient for arrangement, but was not usually successful for hearing and speaking in; and, therefore, it was desirable that the room should be oblong, but not very far removed from a square. Then came the question how the children were to be ranged; were the windows to be at the end or the side of the room? The advantages and disadvantages were briefly these: if the children sat along the side of the room, they formed a wide group, but if at the end they formed a narrow group, and were more under the eye of the teacher. This arrangement would generally be found to be very successful, besides having the advantage of a greater spread of light. Another point to be considered was that of having sufficient provision for ventilation. The difficulty of working and of teaching in a hot or close room was so great as to neutralise every other provision for comfort; and ill-designed rooms, if they were only thoroughly ventilated, would, in many cases, be more happy places to work in than the best lighted rooms if they were allowed to become close.

Mr. William J. Spratling said, upon the subject of cloak-rooms, he might mention that, having had occasion to go over some plans for the enlargement of a secondary school, he found the architect had arranged for a long room, with forms for the children to sit upon to change their shoes, along the length of the room, the cloaks being hung up on each side of the form. It occurred to him that was rather inconvenient, because if there were a large number of children the crowding would be excessive, and he suggested that a corridor should be made down the centre, the sides being divided into cubicles, with a door in the centre, thereby obtaining a larger space upon which to hang the cloaks. Mr. Robins had suggested that the lavatories should be in the cloak-room, but he questioned whether it should be desirable to have them in a room where you wish to dry wet clothes, as children very often throw the water about the room. Architects seemed to take a class-room as a type, and said because a lecturer would stand in a room and have a black board behind him, therefore the room would be good for a class-room; but the teacher had to keep his audience in order, and if he had to turn his back to the class, little pranks would sure to be carried on. He thought it would be desirable that the teacher should stand at an angle, so that he might when writing on the board have his eye upon the class. As singing was generally taught in schools, it was important they should have a gallery, which might be used also upon occasions such as the distribution of prizes, when the children might be massed in the gallery, facing the chairman, who distributed the prizes, the audience being in the middle of the room.

Eastbourne Surveyorship.—Mr. E. W. C. F. Schmidt is the newly-appointed building surveyor here, and has control over all new buildings erected in the town. Mr. Schmidt was previously surveyor to the city of Ely local Board. The extent to which Eastbourne has increased would surprise those who knew the breezy little watering-place ten years ago, and have not seen it since.

A Stained Glass Window has just been placed in Scotby parish church, Carlisle, by Mr. Joseph Bendle, of that town, the subject being the Raising of Lazarus. It is a two-light window, with a brass plate underneath, with the memorial inscription and date, and was executed by Messrs. Gibbs & Howard, of London.

THE DECORATION AND FURNITURE OF TOWN HOUSES.

THE second of the course of six Cantor lectures on "The Decoration and Furniture of Town Houses" was delivered last Monday evening, by Mr. Robert W. Edis, F.S.A., at the Society of Arts' hall, John-street, Adelphi. There was again a crowded attendance. The lecture, which treated of floor, wall, and ceiling decoration, was copiously illustrated, including three painted wall-paper figure decorations of birds, by Mr. Marks, R.A., which were much admired.

Mr. Edis commenced by saying that, considering the position of town buildings, it was desirable that the general tone of colouring and decoration should be bright and cheerful, so as to neutralise as much as possible the prevailing gloom. He saw no reason why the inlaying of stone with coloured cements or marble or tile slips should not be more generally adopted for the pavements of halls and conservatories. Linoleum and oil-cloth soon lost their brilliancy, and wanted renewing in a few years. Marble, mosaic, and plain or encaustic tile paving had of late years come largely into use, but they should remember that with tiles, simple designs and masses of plain colours, red, grey, or buff, were to be preferred to any elaborate patterns, which, as a rule, were anything but artistic, and too often utterly unsatisfactory. He considered linoleum and oil-cloth objectionable, and to be avoided as far as possible. Painted oil-cloth soon became shabby by its pattern being worn through, and, as a rule, this pattern was only an imitation of tile or parquet work, bad in treatment, colouring, and design. Until quite recently it had been the fashion to cover the floors of reception and bedrooms with drugget carpet, which, as a rule, was never removed except in spring and autumn cleanings. The system was utterly opposed to all laws of health and cleanliness, and floors thus covered became the receptacles of dirt and dust, which no amount of brushing could get rid of. A certain amount of plain floor should be left all round the sides of the room, as the covering of the whole surface was unhealthy and dirty, and the cost of the carpet was infinitely more than the cost of painting or staining. It would, the lecturer said, be impossible in our dingy city to apply the teaching of the old northern Italian artists, who covered with distemper-decoration the exteriors of their houses, to London houses of the present day; but we might surely take from our work some few hints for the decorative treatment in paint of plain plaster walls, and so improve the unutterably inartistic and miserable appearance of London streets and squares. We could not have Italian climate; but surely this was all the more reason why we should endeavour to give some colour to the dingy streets, made more dingy by the smoke and other impurities of London atmosphere and fogs. Even the stucco palaces of Belgravia and Tyburnia might be made fairly pleasant objects to look at if relieved with coloured decoration in some such way as the houses in the Piazza delle Urbe, at Verona, from their dreary monotony of imitation stone colouring and sickly commonplaceness of Portland cement. He did not see why we should have all our houses dingy as well as bad in architectural design. Something could be done by the judicious use of colour in some of the monotonous lines of cornices and wall faces, instead of always adhering to the dreariness and dismal commonplaceness of grey and stone colour. No wonder that London was the dreariest, dingiest, and ugliest city in the world; no wonder that all artistic feeling was crushed when we saw the endless rows of cement-covered houses of hideous outline, left gray in all the shabbiness of Portland cement, or blossoming out in triennial springtides of fresh paint, which whitened for a while the tasteless vulgarity of their street façades. It would seem that the architect and the painter were not in accord; that there was a want of that proper sympathy and art-brotherhood which, in older days, made men think nothing too insignificant to work upon. Why should this want of sympathy exist? He was quite certain that, amongst all good architects, there was a strong desire to bring into their work the work of the painter, and so associate with their buildings, in goodly and pleasant fellowship, the work of the sculptor and the painter. He saw no reason why the skill and thought of the architect and decorator should not be employed in making the general run of commonplace street-architecture pleasanter to look at by means of coloured decoration lightly, simply, and economically treated. Why could not they learn a lesson from the treatment of some of the external façades in the Street of Nations in the late Paris Exhibition, and adopt majolica ware and faïence for the external decoration of the houses? The money spent on a piece of *bric-à-brac* or an ordinary water-colour drawing, if judiciously laid out, would provide for the decoration in good glazed terra-cotta or tile work of the entrance-door of a house, and with a little thought and a moderate outlay the miserable skeleton of London street-houses might be vivified and brought into at least some semblance of pleasant life and colour.

In regard to internal decorations, tapestry was gloomy, and held dust; and silk and satin were too delicate to stand the smoke and dirt of town atmosphere. Anything that held dust was essentially out of place on the walls of our rooms, but he saw no reason why good pieces of old tapestry should not be strained and hung on the walls of the halls or staircases as pictures or any other objects of art, so long as they were movable and easily shifted for cleaning purposes. All flock papers, as well as those stamped in relief, were to be avoided, as they collected dust, except for ceiling or frieze decoration. After referring to a number of specimens of wall-papers which were exhibited, the lecturer regretted that new patterns were made each year; for, as artists, their aim should be to combat the shifty nature of a public who would always demand change if they could get it, and would seek for a new fashion in papers as they did in dress. If their constant change and desire of novelty was to be gratified, it behoved the manufacturer to take heed that his novelties should mean progress, not mere change.

Referring to ceilings, the lecturer said that where they were enriched, it would be better to treat them almost like Wedgwood ware, with light tones of pink, green, grey, or buff; but where they were quite flat, it was desirable to tint them a light tone of grey or cream colour, to get rid of the extreme glare of pure white. Just eighteen centuries ago, within the ancient streets of Pompeii, might have been seen the luxury and splendour of art form and colour as applied to house decoration. The excavations which had from time to time been carried on during the last half-century had brought to light marvellous specimens of mosaic and fresco decorations, all showing great skill and knowledge of grouping and composition, and admirable arrangement of light and shade. The examples of frieze and terra-cotta might surely teach us something of decorative art in the graceful drawing of ornamental borders, in the careful rendering of bright and delicate colouring, and in the general treatment of decorative design on plaster work. He saw no reason why the houses of the present day should not have art decoration, setting forth some well-known events in the history of the country, stories telling us of the nobility and of the greatness of those who had helped to make the country what it was, instead of having the sickly sentimentalism in design and treatment. If art was worth anything at all, it should be beautiful, and portray grace and beauty of thought and colouring, with subjects emphasising the better life that was in them. It was, perhaps, unfortunate that the greater inducement of painting easel pictures should prevent our great artists giving more time to decorative work. It could only be hoped that, with the increased demand for and delight in real art work in our houses, ere long a school might be founded of young artists who would, at fairly moderate cost, be willing and glad to do purely decorative work.

There was at present amongst artists, he feared, a want of that true sympathy in each other's work, and of that just appreciation of, and respect for, each other's talent, which alone could lead to true association of labour and fraternity of toil. Art-decoration was, as a rule, treated as easel picture-work, with figures modelled and rounded, and with landscape and perspective drawing and modelling, utterly at variance with true decorative work. He saw no reason why the artist should not with pleasure and profit to himself and those associated with him, and in conjunction with the architect, design and complete good and artistic decoration at a fairly moderate cost. He was sanguine enough to believe that art decoration could be done well and at a very moderate cost, and at the same time to the pleasure and profit of every one connected. He saw no reason why our best painters should not help us in the revival of decorative work, even as Fra Angelico, Giotto, Correggio, Michelangelo, and many other great masters did in days gone by. Decorative subjects done under the supervision of a good painter were worth all the prettiness of decorative work in gold and colour, or all the bad ornament of conventional form which money could buy, or mere decorators could design for them. It was better to have a room decorated by the hand of a master than all the industrious pattern-work which hands could make; for, if "life without industry is guilt, industry without art was brutality." He ventured to think that the Royal Academy, with all their great wealth and power, could do more than any private individuals towards providing for a real and national school of decorative painting, and by this means they would obtain a higher character of artistic decoration, and so bring art-work within the reach of thousands, where at present it was only to be obtained by those with whom price was no object.

In conclusion, he suggested for public consideration whether it was not desirable from mere economical motives to decorate rooms a little more artistically. In our dreary London rooms there might be internal light and colour that should help to make us almost unmindful of the dinginess and smoke without, and add much to the comfort and home-like feeling which good colour, good design, and good taste could not fail to give.

The next lecture, to be delivered on Monday next, will treat of furniture.

THE PUBLIC LIBRARY, CAIRO.

A CAPABLE correspondent, writing from Cairo, says:—I have just hit upon something interesting, about which no one ever speaks, and respecting which Murray has only a few unimportant lines,—namely, the Public Library. We had some difficulty in finding it, so little is it known; and we drove through such queer, narrow, utterly Oriental, but by no means squalid, streets, to arrive at it: streets turning sharply to the right and left, evidently of ancient date, before carriages were introduced, and in which the angles everywhere have been chopped off to allow space for one carriage to pass through. The library was first started by Mahomet Ali, about forty years ago, but it was allowed to die out by his successors, till the ex-Khédive, who certainly was a very enlightened, Europeanised sovereign, founded the present building ten years since. The idea mainly arose, I believe, from the desire to preserve the magnificent copies of the Koran that remained in the mosques, and which were rapidly disappearing from neglect, ill-treatment, and the cupidity of their custodians, who sold them whole or piecemeal to greedy tourists. They are enormous books (one in 2 vols.), about 3 ft. long by 2 ft. 6 in. wide, I should say, some of them, and are most beautifully-written with a reed, cut like a pen, on paper made on purpose in Egypt, formerly, of the thickness, colour, and apparent texture of parchment; gold lines run between the writing (which in some of them is in letters 1½ in. long), and there are beautiful geometric designs, most delicately drawn in all kinds of colour and gilding. I forget the date of the most ancient, but another was of the eleventh century, and one of most delicate penmanship, and elegant and minute decoration, was "not very old, only about 300 years." The most beautifully-adorned copy of all was produced in Morocco, and this was in its original binding. Another very interesting one had a translation in Persian interlining the black writing of the original; some eminent theologian had, still in between the red and black lines of the letters, written his commentary on the text. Many of these valuable tomes had been in a terribly dilapidated condition when brought to the library, the pages worn by careless thumb and fingers of the Moslem clergy, and with patches of rain-stains and damp-rotting disfiguring the illuminated pages. These have been carefully removed where possible, and the pages have been most skilfully pieced and repaired.

Besides these Korans, the library is, as yet, but very poor, many shelves being quite empty, or only partially filled with books; but great care is being taken as to arrangement, classification, &c. The works of each nationality are to be kept separate, and to be sub-divided into

subjects. Of course, scientific and erudite books are most sought for, but others are admitted, especially those referring to Egypt and its inhabitants. Unfortunately, these are all European, "for," the librarian said, "nothing printed of any consequence is ever produced in Egypt now." I fear this is too true; but as the said librarian is an Italian, perhaps it should be taken *cum grano*. In one room was pointed out to us a not very large collection of books formerly belonging to the brother of the ex-Khédive, and bought by him on the death of that brother, and presented to the library. We understood that the sum paid was 22,000*l*., but that seems unlikely, we think; still, an Egyptian gentleman to whom I have just spoken, said he knew they were bought very dear indeed.

R. F. H.

THE WATSON GORDON PROFESSORSHIP OF FINE ARTS.

THE following are the names of the candidates for the Watson Gordon Professorship of Fine Arts at the University, Edinburgh:—F. E. Hulme, Marlborough College; G. P. Hamerton, Autun, France; W. Roscoe Osler, London; Jean Paul Richter, London; John Forbes Robertson, London; J. F. Rowbotham, Edinburgh; and W. Cave Thomas, London.

The patrons (the University Court and the President of the Royal Scottish Academy) met to consider the applications on the 12th inst., when it was determined that the election should be made on June 7th. The duties of the professorship will require residence in Edinburgh for about five months annually, and the delivery of not less than forty lectures on the history and theory of the fine arts, including painting, sculpture, and architecture, and other branches of art therewith connected. The emoluments of the chair consist of the interest of rather more than 11,000*l*., and of the class fees.

It is to be hoped the appointment will be made with a view to real work, not *dilettantism*.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

AT the ninth meeting of the session, Mr. H. Syer Cuming, F.S.A. (Scotland), occupied the chair. Mr. Irvine reported the discovery of a large number of fourteenth-century tiles, during the restoration now in progress at Bangor Cathedral. Many of these are of great beauty. Mrs. Moore Hyde exhibited a large number of early newspapers, showing in a remarkable manner the rapid progress of journalism. The discovery of a Roman villa near Brading, Isle of Wight, was announced by Mr. J. Henry, B.A. The site is on Marton's Farm, and already a tesselated pavement, and several continuous walls, have been excavated. Mr. R. Blair described a small Roman altar, which has been found at the Lawes, South Shields, the site of the recently-discovered Roman station. Mr. Loftus Brock, F.S.A., exhibited a large number of fragments of Roman fictile vessels found in London, and remarkable for indicating various classes of pottery made by that people; one of these had a potter's mark in cursive characters, which were at first taken for Hebrew. Mr. Chas. Warne exhibited some Etruscan objects of great interest, one being the attenuated figure of a warrior, intended to represent his departed state. Various other objects were exhibited by the members, and among these were two pewter measures by the Rev. S. M. Mayhew, one being inscribed "Timothy Buck at ye fountain, in Portugall-street, against ye Playhouse," and the other with the name of "R. Yeo, at ye Blew Lattice, in Ship-yard, within Temple Bar." Many interesting records of the old playhouse were noted, and Mr. Lambert called attention to the marks on early pewter work.

The first paper was by the chairman, who traced the history of ladies' work-bags, and indicated the amount of interest and information that might be obtained from these articles, which were now in less use than formerly. The lecturer illustrated his remarks by the exhibition of several examples of English and foreign work; one of seventeenth-century date was elaborately worked in crewels.

The second paper was by the Rev. Prebendary Scarth, on a series of sepulchral inscriptions brought from Italy, and now at Rookwood House, near Llandaff. The importance of making collections of inscriptions in private possession was dwelt upon, and it is to be hoped that the paper will be but one of a series. In conclusion, Mr. Lambert referred to the impending removal of the old buildings opposite Lambeth Church.

NEW PANORAMA BUILDING AT THE CRYSTAL PALACE.

AN entirely new feature is about to be added to the attractions at the Crystal Palace, which the directors expect will increase the number of visitors to this popular place of resort. It consists of a grand panorama of the Siege of Paris, for which a new building is now in course of erection within the palace grounds. The site of the new structure is at the bottom of the terrace, immediately opposite the central transept. The building, which is to be circular in form, will be 125 ft. in diameter, and in many respects it will bear a resemblance externally, to the Colosseum lately in Regent's Park. It will be 51 ft. in height to the main cornice, the extreme height to the central apex of the roof, which will be parabolic in shape, being about 100 ft. The circular sweep of the structure will be in fifteen divisions, each marked by ornamental piers or columns. The materials of the building will be white brick, relieved with Portland cement cornices, pilasters, and general dressings. The building will have a portico at the entrance facing the central transept. The materials of the roof will be iron and zinc, the iron being supplied by a Belgian firm. The entrance into the building leads into a corridor about 12 ft. in width, carried to the extent of about one-third of the circular form of the building. This again leads into a spacious apartment, in a structure immediately adjoining, but distinct from, the main building. This apartment is intended to represent a distinct class of pictures in connexion with the siege. From it the main building is entered, in the centre of which there will be a staircase by which a circular central platform, 25 ft. in height, is reached, and from this platform the several views of the siege will be obtained. The interior walls of the building will be entirely covered with a series of pictures representing the various phases of the siege, produced from photographs taken during the time the siege continued.

Mr. Gilbert R. Redgrave is the architect. Messrs. Kirk & Randall, of Woolwich, are the contractors for the foundations of the building, which are now in progress, and it is expected that the contract for the superstructure will be settled within the next few days, as tenders are at present being sent in. The object of the directors is to have the building completed and open to visitors not later than the month of June or early in July, and the panorama is intended to be a permanent feature amongst the entertainments and attractions of the palace.

THE ARCHITECTURAL ASSOCIATION AT PLAY.

SOME time ago it was our duty to announce that architectural opera was making a start, and we are reminded by the programme of the members' *soirée* of the Architectural Association that "the 1,092nd night" (since the original representation) has been reached. On the 9th inst. it was passed with honour. Time has made its mark on the acting edition; many of the topics of to-day are treated to a song, a hit, or a touch. The Client, played by Mr. H. Stannus, author of the libretto, and composer of the music, is still seeking an architect to his mind, and still assailed by the modest exponents of "Thirteenth Century" (Mr. A. O. Booth); "Italian Renaissance" (Mr. R. C. Page); and "Queen Anne" (Mr. E. G. Hayes). Good and frequent laughter showed that the performers aimed the shots,—none poisoned by ill-nature,—well, and hit the mark. Jones (Mr. H. D. Appleton), the Client's servant, with red nose, breeches, and hair, and richly endowed with architectural knowledge, brought everybody and himself into notice. A stanza from the moral resolve of the rivals may be quoted here from the programme, "The British Builder and Architecting News," an odd bit of good-humoured squibbing at things in general:—

> "'Design with Beauty, build in Truth,'
> These words of wisdom firm and sure;
> If follow'd, make our work endure,
> Withstanding Time's devouring tooth,"

which is a good bit of moral sentiment in its way, and calls to mind prettily the motto of the Association. Mr. E. J. Tarver's sketch, "Rival Showmen," one proud of over-restoration, and the other of letting alone, puts the case apparently without much bias either way. "Modern Architecture" might perhaps make a more attractive show if she could rise to the proper level. But we have no call to prophecy,—only to make record of a pleasant evening, and of the fact that the Association plays as it works,—finding plenty of its members ready in wit and will.

MONKSTOWN HOSPITAL, CO. DUBLIN.

THE alterations here have been so extensive that all traces of the old building have disappeared, and a larger and more commodious edifice has arisen in its place. A new wing has been added containing four wards, the pharmacy, bath-rooms, servants' rooms, and wards designed for special surgical and medical cases, and, notwithstanding the limited area available, a cubic space of 1,600 ft. is allowed to each patient. The walls are of granite, lined with bricks and plastered with Keene's cement. The wood used for the doors, floors, and fittings, is pitch-pine, polished. Two special wards, "The Charlotte Ward" and "The Barton Ward," have been opened through the generosity of two ladies. Both wards are models of neatness and comfort, and quite superior to anything to be met with in many hospitals. The walls are painted, ornamental tiles being used. The floor is of polished oak with teak border, supplied and laid by Messrs. A. J. Arrowsmith & Co., of New Bond-street, who also supplied the oak chimney-piece and pier-glass to special designs.

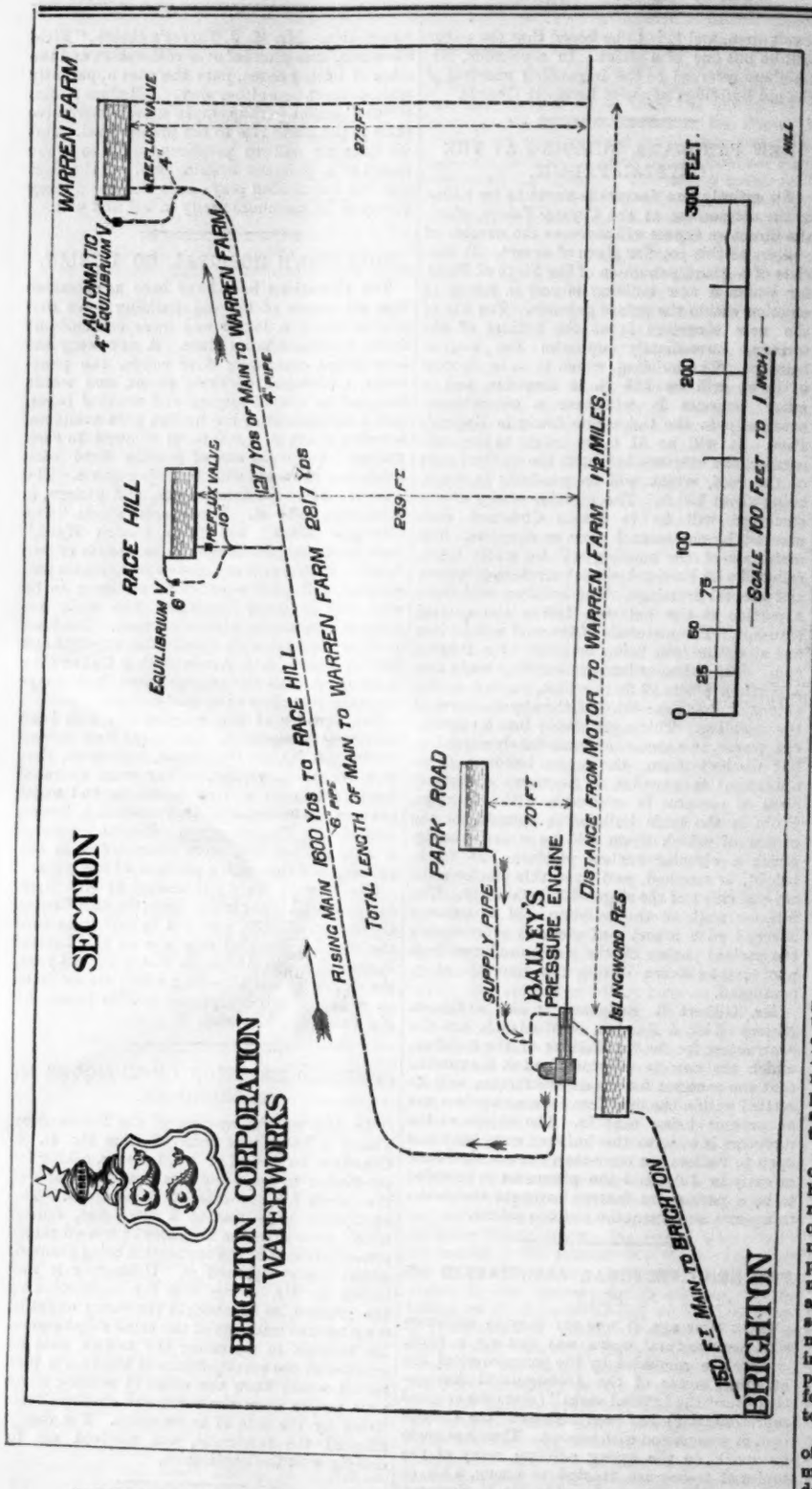
The exterior of the hospital has also been considerably improved. The works were carried out by Mr. Thomas Pemberton, contractor, East Hanover-street, Dublin. They were executed from the designs and specifications and under the personal direction of Mr. Frederick A. Butler, architect, of Dawson-street. Messrs. Sibthorpe & Son, of Cork-hill, were entrusted with the painting and decorative portions of the work.

The "Barton Ward" is erected by Mrs. Hart, as a memorial to her late brother, Captain Barton, Coldstream Guards, who fell in trying to save the life of a wounded comrade at the Zablani Mountain, South Africa, in March of last year, the circumstances attending which are set forth on a handsomely-sculptured marble tablet, by Mr. Forsyth, of London.

PROPOSED ERECTION OF KIOSQUES IN BERMONDSEY.

AT last week's meeting of the Bermondsey Vestry a letter was received from Mr. D. E. Chandler, on behalf of Mr. Leutner, asking for permission to erect kiosques in various parts of the parish for the sale of newspapers. The application gave rise to a discussion, during which several of the members expressed themselves in favour of the application being granted, whilst others opposed it. Ultimately it was moved by Mr. Sharpe that the application be not granted, as he thought the vestry ought to consider the interests of the small shopkeepers. Mr. Holmes, in seconding the motion, said he considered the establishment of kiosques in that parish would have the effect of sending many poor people upon the rates who obtained their living by the sale of newspapers. The vestry adopted the resolution, and resolved not to comply with the application.

Perforating Glass by Electricity.—A simple method of perforating glass with the electric spark is described by M. Fages in a recent number of *La Nature*. The apparatus required consists (1) of a rectangular plate of ebonite, its size, for a coil giving 12 ctm. sparks, about 18 ctm. by 12; (2) of a brass wire passing under the plate, and having its pointed end bent up and penetrating through the plate,—not farther. This wire is connected with one of the poles of the coil. A few drops of olive oil are placed on the ebonite plate about the point, and the piece of glass to be perforated is superposed, care being taken not to imprison any bubbles of air. The olive oil perfectly accomplishes the object of insulating the wire. One has then only to bring down a wire from the outer pole of the coil, on the piece of glass, above the point of the lower wire, and pass the spark. By displacing the glass laterally for successive sparks, it is easy to make a close series of holes in a few seconds.



BRIGHTON WATERWORKS.

WATER PRESSURE.

WITH reference to the water-pressure pumping engine erected at Brighton, Messrs. W. H. Bailey & Co. write:—"Your correspondent, 'C. E.' (p. 393, *ante*), is evidently under a misconception as to the duty required of the pump. The water at Warren Farm is 279 ft. above the reservoir at Islingward-road, and the power requisite to force the water up to Warren Farm is obtained by the 70 ft. fall from Park-road to Islingward-road, so that the net elevation forced against is 209 ft. to Warren Farm and 169 ft. to Race-hill. The accompanying plan will more clearly explain this than any verbal description."

We may add that the only motive power is the water, which is afterwards used by the inhabitants living on the lower level, the work being done with no other cost than that of maintenance of the engine. It is entirely automatic in its action, and, having no dead centre, stops and starts without requiring any attendant to be near it. In the event of there being a sufficient quantity of water in either of the upper reservoirs, the supply to that ceases, and if both are full, the engine remains motionless until more water is required. The engine delivers from 50,000 to 60,000 gallons of water per day into either or both of the upper reservoirs. The pump is double-acting, has a brass lining, gun-metal piston-rings, valves, and seatings. The motor has a gun-metal cylinder, in which works a 12 in. gun-metal piston packed with cup leathers. The slide valves with their faces, as well as the valve piston and cylinder, are all either of solid gun-metal or lined with it. Bailey's gauges for indicating pressure are affixed to inlet of motor and outlet of pump. The indicator on the motor cylinder records the number of strokes, and thus approximately the amount of water delivered can be read off. The piston-rod, crosshead, levers, links, and all the working parts are of steel, electro-plated except on their working faces.

THE HORSEMONGER-LANE GAOL SITE.

NOTWITHSTANDING that the magistrates of the county of Surrey have advertised the Horsemonger-lane Gaol site for sale with the view of its being built upon, renewed efforts are in progress to secure it as an open space for recreation purposes, and several of the local bodies on the south side of the Thames are uniting in a request to the Metropolitan Board of Works to purchase the site. The remarks upon the subject which were made last week by Dr. Carpenter at the meeting of the Surrey justices, appear to have considerable force. Amongst other arguments in favour of the land being secured for recreation purposes, he urged that, although the magistrates were trustees for the public so far as the commercial value of the plot was concerned, they were also trustees in various other ways. They had to consider not only pecuniary matters, but the morality of the public, and if, having the opportunity to do otherwise, they crowded every space of ground with buildings, they would be adding to the temptations of the people as well as depriving them of that fresh air which was so necessary for the health of their children. The matter ought not to be decided without giving those interested in the public health, as well as in the general welfare and morals of the people in that district, an opportunity of obtaining the means by which this open space might be preserved. If the justices looked at the district, and the enormous mass of people who were packed in it, as well as the evils that followed from a want of some place where children could breathe the fresh air, it appeared to him they would be convinced that in disposing of this land for building upon they would be committing serious injury upon the people of the future.

Since the public announcement of the site being for sale the Bermondsey, Newington, Rotherhithe, and other vestries have memoralised the Metropolitan Board of Works to purchase the land. We hope their efforts will be successful.

SANITARY OFFICERS' ASSOCIATION.

ON Saturday last the annual and special general meeting of the members of this association was held at the office of the Chief Inspector of Nuisances, the Council House, Birmingham. Mr. John Lowry, sanitary inspector, Tettenhall, near Wolverhampton, was unanimously appointed president, and Mr. F. Booker, chief sanitary inspector, Birmingham, secretary for the ensuing year.

This association, which consists of inspectors of nuisances and other officers engaged in the health or sanitary department of urban and rural sanitary authorities, seeks to attain its object by means of social intercourse and communication with each other, the reading of papers and exchange of experience on sanitary matters, thereby enabling its members to acquire a more extended knowledge of sanitary science, and the best methods of inspection and mode of procedure in dealing with nuisances injurious to health; and of carrying out the provision of any Act, bye-law, or regulation in force, which it is the duty of a sanitary officer to take cognisance of.

Mr. John Turner, the chief sanitary inspector of Bury, Lancashire, attended, and exhibited a model of a patent dividable closet guard and deodoriser, whereby liquids may be intercepted and so separated that the residue or solid matter does not become offensive whilst in the pan or receiver. Great interest was manifested in Mr. Turner's new method for collecting and dealing with excrementitious matter, and he promised to further explain his patent to the members at their next quarterly meeting, to be held on the second Saturday in July.

The remaining business consisted of the discussion and adoption of a code of rules for the government of the association.

Royal Albert Hall.—Dr. Bexfield's oratorio, "Israel Restored," with Miss Anna Williams, Madame Mary Cummings, Mr. Vernon Rigby, and Mr. Robert Hilton as executants, aided by William Carter's choir, was given with good effect on Thursday evening last. On St. George's Day, April 23 (Shakspeare's Birthday), there is to be a grand English festival, with a strong list of soloists, the same choir, and the band of the Grenadier Guards.

THE AGRICULTURAL AND GEOLOGICAL INSTITUTE BUILDINGS AT BERLIN AND THE INTERNATIONAL FISHERY EXHIBITION.

WITHIN the past year two new palatial structures have been brought nearly to completion in Berlin. They are the buildings intended respectively the one for the National Agricultural College, and the other for the National Geological Institute and Mining Academy of Prussia. They are situated in the Invaliden Strasse, a long broad street intersecting the northern portion of the city from east to west. The two buildings are separated only by an open space of 100 mètres in width. They are built in the Greek Renaissance style of architecture, and, being a pair of similar design and proportions, they form a decided acquisition to the public edifices of the German capital. The material of which they are constructed is a sandstone of very light tint. The architect is Baumeister Tiede.

The work of fitting the latter of the two edifices for its ultimate object is for a time stopped, in order to accommodate the International Fishery Exhibition,—an enterprise promoted by the German Piscatorial Association. In addition to the Agricultural Institute building, which, with its spacious interior glass-covered courtyard surrounded by colonnades, will form the centre of the Exhibition, the space between that and the Geological Institute has been covered with extensive wooden sheds connected with the main portion of the show by corridors. A lower line of sheds running between the two stone edifices, and abutting on the street, is intersected by two high-gabled houses, in the style of Norwegian fishermen's cottages, and these will form the entry-gates of the Exhibition. The baldness of bare boards has been obviated, and an artistic appearance imparted to these structures, by colouring them deep brown, while their asphalte roofs have been adorned with broad and many-coloured stripes, forming a mosaic after the style of straw-work. On entering, we find the long forecourt overhung with fishing-nets of every description; while, in the background, an extensive aquarium of octagonal shape, and crowned by a group of sculpture, is rapidly approaching completion. Behind the aquarium we come to an extensive open space, or court, enclosed by the four wings of the wooden sheds. Here, on an island, is a little smoking or curing house, in which a young Norwegian fish-girl is carrying on the native process of fish-curing. The smoking-house is connected with the upper floor of the nearest sheds by a bridge. The court around is adorned with trees and plants, and close by is the large tent for the refreshment department. An interesting portion of the Exhibition is entered from near the aquarium, consisting of subterranean grottos and stalactite caverns. In the wooden sheds all the larger and coarser implements employed in fishing are to be exhibited, while the rooms in the Agricultural Institute are destined for the reception of the finer kinds of apparatus, as well as for the extensive show of tinned and preserved fish. In all parts of the Exhibition the work of opening the chests and boxes which have arrived from almost every country in the globe is at present going on. The opening day is fixed for the 20th instant.

BUILDING LEASES.

DRIVER v. HOWELL.

THIS was an action in the High Court of Justice, Chancery Division, before Vice-Chancellor Sir Richard Malins, by the plaintiff, George Driver, a builder at Wandsworth, to enforce specific performance of an agreement dated in November, 1875, by which a person named Joseph Robinson, since deceased, agreed to lease to the plaintiff, for ninety-eight years, a piece of land at Chiswick, upon which land the plaintiff was to erect thirteen houses, some of the value of 300*l.*, and others 400*l.*

The houses were all built to the satisfaction of Robinson, and separate leases were granted of each house upon completion; but the defendant, Mrs. Howell, who was Robinson's personal representative, refused to complete the agreement to lease the whole piece of land, the ground of such refusal being that the thirteen houses so erected by the plaintiff did not occupy the full amount of space allotted to each by the plan, and there was a small piece of land still left upon which two more houses could be built. The defendant submitted that under the circumstances the plaintiff had forfeited all right to the vacant plot of land or to have any lease thereof. Nevertheless, she was willing that the plaintiff should have such lease if he would build two other houses upon the vacant plot of ground. The defendant had taken possession of the land, and refused to give it up to the plaintiff, and she alleged that the ground-landlord would not grant a lease to her unless the two extra houses were built.

Mr. Eyre appeared for the plaintiff, and Mr. Bristowe, Q.C., and Mr. Berry, for the defendant.

The Vice-Chancellor said he considered this case free from doubt. The agreement of November, 1875, was that Robinson should grant a lease of the whole piece of land, upon which the plaintiff was to build thirteen houses to the satisfaction of Robinson. The houses had been erected, and the fact that a lease of each house had already been granted was sufficient to preclude any objection that they were not built to the satisfaction of the lessor. There was no stipulation in the agreement that the plaintiff should not build more than thirteen houses; and there was no justification for the defendant having re-taken possession of the vacant plot which was included in the land which Robinson had agreed to lease. Mrs. Howell had been wrongly advised in the conduct she had pursued, and there must be a decree for specific performance of the agreement, and for delivery up of possession to the plaintiff of the vacant plot, and the defendant must pay the costs of this suit out of her own pocket, as it was not caused by the act of the deceased Mr. Robinson.

An outsider, reading only this statement, would feel disposed to say that the legal advisers of the defendant ought themselves to pay the costs.

COMPETITIONS.

Girls' High School, Exeter.—We understand that the Governors of the High School for Girls have accepted the plans of Messrs. Hayward & Son, architects, Exeter, for the new school buildings which are to be erected at Barnfield. Fourteen sets of plans were received, and the governors appointed Mr. Robson, architect of the London School Board, to act as their assessor. Mr. Robson made a selection of five designs for further consideration, and to report upon. He ultimately selected two dissimilar designs, bearing different mottoes, both of which had been sent in by Messrs. Hayward & Son, and recommended them for the first and second prizes offered. One of these designs was accepted yesterday. The new buildings will be of the Tudor character, and comprise a large school, eight class-rooms, and residence, and accommodation for the assistant-mistresses.

Shrubsole Church.—We understand that of the designs sent in, those marked "Dum Spiro Spero," "Wessex," and "Thames," were selected by the committee, and that the ultimate choice has fallen on the first-named, and the author of which is Mr. Williamson.

THE "RIDER" HOT-AIR HOUSEHOLD PUMPING ENGINE.

THE plentiful supply of pure water for household purposes is of such vast importance, and is, unfortunately, so frequently deficient in our country residences, that any invention that places it within the power of every householder to pump the water for his own requirement at a nominal cost should be considered a boon. This is to a very great extent accomplished by an American invention, that of Mr. A. K. Rider, of Waldon, U.S.A., in the form of a small pumping-engine, the motive power of which is heated air. It is perfectly safe, and so simple that a maid-servant can manage it, and so economical in fuel that 1,000 gallons of water can be raised, it is stated, to a height of 80 ft. for the sum of 1d. The engine has, too, the advantage of not being altogether new and untried, it having been introduced into this country by Messrs. Hayward Tyler & Co. in 1876; but as its merits may have escaped the notice of our readers, and as the subject is an important one, we are desirous of bringing it especially before them. Several medals and diplomas have been awarded to it. Amongst which are the silver medal of the Royal Agricultural Society, a silver medal at the Paris Exhibition, as well as one to the inventor. It has ever since its introduction here been advancing steadily in public esteem. Our readers can see it in operation any day (excepting Saturdays) at Mr. J. C. R. Oke's, Assoc. Inst. C.E., 39, Queen Victoria-street.

Prof. Hansen.—On the 30th ult. Professor Konstantin Hansen, one of the veterans of the Danish school of historical and *genre* painters, died at Copenhagen, at the age of 76. He was born in Rome in 1804, his father, Hans Hansen, living there as a portrait-painter at that time. Konstantin at first studied architecture under Professor Hesch, but soon evinced a decided inclination for painting. He obtained two silver medals from the Academy, and then resided in Rome from 1835 to 1844, where he occupied a prominent position in the group of artists who gathered round Thorwaldsen.

SHALLOW TUNNELLING.

A CORRESPONDENT, signing "M. Inst. M.E.," writes thus:—"In the concluding portion of your article on 'The Completion and Cost of the St. Gothard Tunnel,' reference is made to the 'shallow tunnel-work of the Metropolitan District Railway.' Taken in connexion with a previous portion of the article, this statement might lead some of your readers to think that the Metropolitan District Railway had been driven after the manner of an ordinary tunnel. This, however, was not the case, as the whole of the line is of the arch-covered-way system of construction, and was built in the open, somewhat after the manner of an ordinary bridge, and was afterwards filled in. The arch which fell in at Blackfriars Bridge was an ordinary skew bridge, and, I believe, failed through the excessive loading of one side during the filling in of the top."

As a member of the Institution of Mechanical Engineers thinks that some of our readers might imagine that a tunnel could be or would be driven some 4 ft. or 5 ft. under the surface, we print his letter. No one who takes any interest in public works could have visited London during the construction of the Metropolitan Railway without being aware of the open cutting of the gallery. And no one can reflect for a moment on the differences of level between road and rail, as measured by the number of steps in the staircases at the stations, without coming to the same conclusion. Our opinion as to the cause of the fall of the arch at Blackfriars will be found in the *Builder* of May 7th, 1870, and also reprinted *in extenso* in the *Times* newspaper. It will be observed that we indicated a depth of 40 ft. above the crown of a tunnel as shallow. In Mr. Stephenson's practice, 70 ft. above the rails was taken as the normal minimum of depth at which it became advisable to substitute tunnelling for open cutting.

BURIAL-PLACE OF SIR JOHN STRANGE.

SIR,—I have noticed a mis-statement in the *Builder* of the 3rd inst., as to the last resting-place of Sir Jno. Strange, Kt. He was buried in the south-east corner of the churchyard of Low Leyton, and almost within a stone's throw of his mansion, "Low Leyton Grange." This house, which had been handsomely and substantially built, said to have been designed by Sir C. Wren, was pulled down nearly twenty years ago, and the estate belonging to it laid out in plots for buildings. One of the rooms contained a handsome and richly-carved chimney-piece, reputed to be the work of Gibbons. It was certainly the work of no ordinary sculptor, and with the carving above the shelf extended to the ceiling, some 12 ft. When the house was dismantled this chimney-piece was sold, I believe, to one of the Rothschilds, and is now in a mansion at Hyde Park-corner. The carving about the chimney-piece contained a portrait of Henrietta, queen of Charles I.

On the large stone tomb in the churchyard was a lengthy inscription, copious and curious.

Shortly after the house was dismantled and sold, the churchwardens of Low Leyton declared their intention to advertise to the effect that, if no one came forward to repair the tomb and surrounding iron railings, which had suffered from neglect, that they would be pulled down and the ground levelled. Two sons and seven daughters survived Sir J. Strange, who died at the age of fifty-eight, but whether any of the descendants of this numerous issue came forward to repair the tomb and prevent what may be characterised as an act of wanton destruction I do not know.

JNO. BLENKARN.

*** Our information as to the burial-place of Sir John Strange, the Master of the Rolls, was derived from two sources, which we considered trustworthy, viz., Pennant's "Some Account of London," edit. 1793, p. 175; and Foss's "Judges of England," vol. viii. (1864), p. 167; the latter informing us that Sir John was appointed Master, 11th of January, 1750; that he died 18th of May, 1754, "and was buried in the Rolls Chapel." Upon referring to Lysons's "Environs of London," vol. iv., p. 168, we find that the Master was buried in the churchyard of Leyton, in Essex, and the same authority prints the interesting inscriptions upon his tomb, as also on the monument inside the church. According to *Notes and Queries*, third series, vol. i.,

p. 353, Sir John Strange was bred up to the law in the famous office of Mr. Salkeld, the celebrated attorney in Brooke-street, Holborn (which, by-the-bye, is barely a quarter of a mile from the Rolls house), and that all these four clerks became eminent judges, and two of them Lord Chancellors,—one of England, the other of Ireland!

THE ARTISANS' DWELLINGS ACT.

SIR,—This Act does not appear to be working satisfactorily, and chiefly because it necessitates a scale of expenses, or rather a denial of returns, on metropolitan improvements, beyond what can be consistently met. Allow us to suggest two modes of dealing with these difficulties, namely, either that a portion only of the new sites should be used for more profitable purposes than artisans' dwellings, or that a portion only of the new buildings should be allowed to be used for such more remunerative purposes. We mean thus:—Where there is a large block of ground vacated by metropolitan improvements, and it is intended to use it for dwellings of the working classes, it would be better to let off a slip of the main frontage for shops or warehouses, which would be very paying, and to use the side and back frontages for the model dwellings; or otherwise to allow in the new buildings (which are generally five to six floors high) one single floor (the ground floor), to be let off for shops of a good class. The returns in ground-rents would thus be greatly increased, with but slight diminution of the accommodation for working-men.

We do not think that the artisan class are particularly anxious to have their private dwellings fronting on great public thoroughfares. The plan now suggested is confirmed in our minds by recently observing the very large plot of ground now to be let by the Board of Works "for dwellings of the industrial classes" in Clerkenwell-road, late Liquorpond-street. This plot has an extensive frontage, and in parts is from 100 ft. to 150 ft. deep, apparently; so that it would be very practicable to build warehouses in front and blocks of dwellings at the back and sides, or shops in front, with floors of flats over.

H. & R. POWELL.

A SUMMER PARLIAMENT AT A SANITARY SEA-SIDE CITY.

SIR,—The remarks of your correspondent "C. C. H.," in your number for March 27th last, I hear, have already set architects and others cogitating upon an idea which, like many others, is only a revival of the past; for, as it is customary for royal courts to be moving about, as has also been the case with not only English, but Irish Parliaments, for sanitary reasons, why, in the name of recruited health, should not so good a fashion be revived? For the mental tax of our members of Parliament, at unseasonable and unreasonable hours, in an unhealthy atmosphere of vitiated air and unconsumed smoke, is more than ought to be expected from such distinguished gentlemen, whose days of usefulness to their country are very often seriously diminished by their brain-taxing duties and their turning night into day to perform them.

Will Mr. Bradlaugh and the Trade Union members of Parliament submit to such a state of things, when the enfranchisement is still lowered to another hole or two? No; the common sanitary builders alone will not consent to their members of Parliament injuring their health for the benefit of their constituents by exhausting themselves under the consumption of London gas, whilst their constituents are refreshing themselves with sleep in their beds. With a summer sea-side residence for our M.P.s, a more rational fashion would be substituted, by their working at their Parliamentary duties more by day-light and less by gas-light, and thus imitate nature a little more, which would ward off diseases which unfit them for the enjoyment of this beautiful world. Two or three sites have been named by your thoughtful correspondent for the erection of such desirable buildings; and I would respectfully include the rising place of Bournemouth, whilst my loquacious friend on my left says I ought not to omit the virgin-inviting soil of West Worthing, where all sanitary requirements can be commanded, the locality being already sheltered by the hills from the north and east chilling winds, to such an extent that a small Italian bird visits the open public fig-garden in the adjoining parish in order to support itself on the small insects peculiar to that tree. This site also is side by side with the very spot selected for the City of Health, or Hygeian City, and would enable architects and builders to express their opinions as to the best and cheapest modes of planning for "a Sea-side Parliament," with sanitary erections.

MACHAON.

THE LAND QUESTION.

SIR,—In your issue of April 3rd, I have read a letter from Mr. E. Grimes, headed "The Land Question," in which he places amongst the hardships that beset the farmer the law of distress, and says, "no wonder the farmer gives up." This view he takes of the law of distress shows want of knowledge. Many farmers have been obliged to give up their farms,—of that there is not the slightest doubt,—but a much larger number have managed to remain in their holdings simply on account of the law of distress, which gives the landlord the first chance of distraint, and who has during the present hard times refrained from exercising his right. Had there been no such law, many who are now trusting to tide it over would have been swamped by their smaller creditors.

HARRISSON MOLIKO.

BRICKMAKING.

SIR,—Will some of your correspondents say what is the price they pay for brickmaking, *plus* cottages and coals? All plant supplied, and winter work at good wages found for the men, and coals for their own use.

A. P.

VARIORUM.

"HINTS to Highway Surveyors on the Repair of Main Roads," by W. H. Wheeler, C.E. (E. & F. N. Spon), though but a sixpenny pamphlet, contains a number of useful remarks and suggestions.——"Engineering Geology," by W. Henry Penning, F.G.S. (Baillière & Co.) is made up from chapters which have already appeared in the *Engineer*. There is no need to say that a knowledge of geology is necessary to the successful pursuit of engineering, and this little book may be found useful as an introduction to the study. Students must, however, go farther if they would not fare worse than better informed rivals.

Miscellanea.

Strike upon Strike.—A curious illustration of the strike mania is recorded in the *Iron Age*, as one of the many examples now occurring in Pennsylvania. The coal-miners at Houtzdale are now on strike for an advance of 10c. per ton, and this is resisted by the masters, on the ground that there have been in this one locality nine strikes in three months. First the men struck for the appointment of their own checkweighman, stating their belief that they were being cheated in this respect. This was granted, with the proviso that the men should pay their own checkweighman. Strike two was to insist upon this official being paid by the employers, and was also won by the men. Then the drivers struck for an advance of 25c. per day, which was conceded, followed by a fourth strike on the part of the trappers, for an advance of 10c.; a fifth by the miners themselves; a sixth by the drivers again, who demanded another instalment of 25c. and also a ten hours' day. All these points have been won by the men, and the masters have now declined to move a step further in concessions, declaring that it would be less ruinous to themselves to make a present of the pit to the men than to work it under such disastrous conditions.

The Proposed Site for the Battersea New Cemetery.—We learn that the Battersea vestry are negotiating for the purchase of the Earlsfield Estate, belonging to Mr. Davis, of Earlsfield House, for the new cemetery which is about to be constructed for the use of the parish. The estate is said to be very conveniently situated close to Battersea, and near the present Wandsworth Cemetery.

Royal Manchester Institution.—A very remarkable collection of pictures and sculptures, the work of Mr. G. F. Watts, R.A., is now being exhibited at the Royal Manchester Institution. These works, which are all the property of one gentleman, Mr. C. H. Rickards, are fifty-six in number.

Sewage Purification at Bradford.—In 1871 the Peat Engineering and Sewage Filtration Company offered to treat the sewage of Bradford, and the Corporation agreed to lease it to them for twenty-one years, and provide land and buildings in which the operations could be carried on, the company, on their part, undertaking to purify the sewage for the sake of the residuum. The works, of which the company was to have the free use for three years, and afterwards pay a rent for them, were erected in the valley, close to the Midland Railway, between Frisinghall and Maaningham stations, at a cost of 25,000*l.* A further sum of 35,000*l.* was expended on the covering of the beck which flows past the works, and on the construction of sewers to convey the sewage from Bradford thither. The works were designed for the carrying out of the process of filtration by peat charcoal. The process proved a failure. The sediment choked the filters, and as the filtering medium required to be constantly renewed, the cost was ruinous. The company collapsed, and the Corporation took possession of the works in 1874. Mr. Alsing, who had been the engineer of the company, was engaged to take them in hand, he having satisfied the Corporation that he could so alter them as to deal with the whole of the sewage at a reasonable cost. His scheme was precipitation by lime, combined with filtration. He experimented with satisfactory results, and from his designs and under his direction the works were afterwards adapted to that process. Since then (says the *Yorkshire Post*) the whole of the sewage, which by reason of the dye-water it contains is as black as ink, and which from other causes that need not be mentioned is as filthy as can be conceived, has been treated so effectually that the solids are entirely extracted, and the effluent passes away into the beck clear, tasteless, and odourless. Mr. Alsing has been able to reduce the annual working expenses from 6,276*l.*, in 1876 to 4,000*l.* The total expenditure in dealing with the whole of the sewage is about 5d. per head of the population of the borough per annum.

The Liernur System.—M. Durand Claye, a French engineer, and one of the editors of the *Revue d'Hygiene*, gives in the number of that journal for February 15th, 1880, some evidence with regard to the operation of the Liernur system for the removal of sewage, which would seem to prove that its results are far from satisfactory. That Captain Liernur's system is a complicated and costly one, which should only be recommended under circumstances where some form of pumping apparatus is almost a necessity, as, for instance, in Holland, is generally recognised by sanitary engineers; but it would seem that it does not, after all, do the work in a satisfactory manner, and that the closets connected with it are often very offensive. It will be remembered that one of the specialities of this system is to use the least possible amount of water, and it is not surprising that the hoppers and soil-pipes should soon be found in an unsatisfactory condition. One of the documents given in the article is an extract from a letter from the engineer of the city of Amsterdam, who thinks that the complaint is exaggerated, but reports that the expense of operating the works during 1879 was 67,200 francs, while the revenue was only 5,586 francs.—*Plumber and Sanitary Engineer, U.S.*

The Severn Tunnel.—The works in connexion with the construction of the tunnel under the Severn, at Portskewet, have been recommenced, and are now being carried on with vigour. The company have obtained the required ground, and Mr. Walker, who is now the contractor for the execution of the whole of the scheme, has commenced to sink three new shafts, one near the original shaft, on the side of the Severn, and two others near the spot where the spring was struck which flooded the works some months since.

Her Majesty's Government have entered into a contract with Messrs. John Mowlem & Co. for the repair, maintenance, &c., of the Royal palaces, public buildings, parks, &c., of London. The contract, which is one of unusual magnitude, has reference not only to the walls and outer fabrics, but to the whole interiors, in every department. The buildings are to be kept in entire repair, inwardly and outwardly.—*City Press.*

Municipal Buildings, Great Yarmouth. The first stone is to be laid on Tuesday next. Illustrations of the proposed buildings will be found in our number for Feb. 22nd last.

Westleigh Parish Church, Devon, was re-opened on the 31st ult., after internal restoration and reseating. Before the work was undertaken, the old oak-carving and the granite pillars, together with the general proportions of the building, were of a character to command admiration, and to inspire an earnest wish that everything should be put into comely order. The late vicar had desired this, and had, indeed, succeeded in re-roofing the structure. The church consists of a nave, with western tower, north aisle, chancel, south transept, and porch. The chancel and portions of the transept and south wall of the nave date from the early part of the fourteenth century. The north aisle, tower, and porch date from the fifteenth century. The whole of the old carved seats have been carefully repaired and fixed in the central part of the church and made good with new English oak. The remainder of the church is seated with pitch-pine. The pulpit is of wainscot oak and walnut on a base of Bath stone. The steps are provided with handrails and balusters of wrought iron. The chancel is fitted with desks and seats of pitch-pine. The altar is of oak as is also the credence-table, which is placed on the north side. A screen of oak, with glazed and traceried panels, is placed in the tower arch, the lower part of the tower being used as a vestry. The old timbers of the roofs have been decorated and gilded. The old flagging and some remarkable old tiles found in the church have been relaid in the nave and aisle, but the chancel is paved with tiles by Messrs. Maw & Co. The wrought-iron hinges to the doors have been carried out by Mr. Oliver, of Westleigh, and the other wrought-iron work has been executed by Mr. Harper, of Barnstaple. The altar-rail is of oak, with wrought-iron standards by Messrs. Hart & Co., of London. The Early English font has been refixed in a better position. The works have been carried out by Mr. T. N. Hancock, of Barnstaple, from the designs and under the superintendence of Mr. J. F. Gould, architect, Barnstaple. The painting and decorating have been carried out by Mr. Cann, of Westleigh. Mr. Pulsford, of Barnstaple, executed all the stone masonry; and Mr. John Garland the plastering, walling, and slating. The original contract was for nearly 500*l.*; but additional works have caused this sum to be exceeded.

Jeremy Taylor's Birthplace.—Efforts are being made to avert the intended destruction of the old timbered houses in the Petty Cury of Cambridge. Their quaintly-carved gables are a characteristic feature of the town. In our volume for 1876, p. 758, we published a view of the house in the Petty Cury in which Jeremy Taylor was born.

Fall of a Girder.—On Monday night, while a large number of men were engaged in lifting a heavy iron girder 100 ft. long to the roof of a new mill near Bessemer Works, Dowlais, the chain by which the girder was being hoisted snapped, and the iron mass consequently fell. Seven men were injured. One lies in a critical condition.

Messrs. Shrigley & Hunt, of Lancaster and London, have published a number of outline sketches of works in stained glass executed by them. Black and white give little idea of what a glass-painter can do, but the publication before us will serve to suggest subjects to Messrs. Shrigley & Hunt's numerous employers.

The Society of British Architects held a very agreeable *conversazione* in the their Galleries, Suffolk-street, on the 9th inst.

The Society of Painters in Water-Colours will open their Exhibition to the public on the 26th inst.

TENDERS

For making alterations and additions to the stage and dressing-rooms, &c., at the Middlesex Music Hall, Drury-lane, and also alterations, additions, and repairs to Nos. 3, 5, 7, and 9, Shelton-street adjoining, for Mr. J. L. Graydon. Mr. Alfred Wright, architect:—

Stoner	£1,307 0 0
Rice	1,287 0 0
Canning & Mullins	1,197 0 0
Wilkins	1,148 0 0
Cullum	973 0 0

For works in sundry alterations and additions to premises, Lewisham High-road, for Messrs. Payne, Bros. Mr. R. M. Shaw, architect. Quantities supplied by Mr. C. Stanger:—

		Fittings.
Brown	£949	£110
Colls	866	170
Gerrard	859	100
Taylor & Parfitt	759	135

For a new iron bridge at Bures St. Mary, Suffolk. Mr. H. Stock, architect. Quantities supplied by Messrs. Marsland & Lock:—

Saunders & Son	£2,265 0 0
Grimwood & Sons	2,220 0 0
Everitt & Son	2,035 0 0
J. & J. Greenwood	1,961 0 0
Capon	1,953 0 0
Parmenter	1,913 0 0
Wash	1,893 10 0
Runnacles	1,853 0 0

For the erection of a villa residence, Bath-road, Swindon, for Mr. S. Snell. Mr. W. H. Read, architect:—

Phillips	£1,475 0 0
Barrett	1,305 11 7
Webb	1,260 0 0
Wiltshire (accepted)	1,256 0 0

For re-building the King's Arms Tavern, Bishopsgate, for Mr. T. J. Guildford. Messrs. Taylor & Locke, architects. Quantities by Mr. H. Lovegrove:—

Shurmur	£6,597 0 0
Doune	6,200 0 0
Silver & Son	5,985 0 0
Eaton	5,930 0 0
Merritt & Ashby	5,915 0 0
Conder	5,851 0 0
Morter	5,747 0 0
Beale	5,541 0 0
Gill (accepted)	4,997 0 0

For erecting a house, Belvedere-hill, Upper Norwood, for Mr. G. Drysdale. Mr. A. G. Lavender, architect:—

Roberts	£1,673 0 0
Niblett	1,649 0 0
Beale	1,549 0 0
Garaham	1,445 17 0

For Board School, Rudgwick, Sussex. Mr. Owen Lewis, architect. Quantities not supplied:—

Frost & Co.	£1,243 9 0
Horn	1,196 10 0
Clark	1,194 11 0
Port	1,110 0 0
Peters & Redford	1,066 0 0
Bowden	1,056 0 0
Beale	1,050 0 0
Restall & Jenner (accepted)	910 0 0

For re-building All Saints' Church, Fulham. Mr. A. W. Blomfield, M.A., architect. Quantities by Messrs. Widnell & Trollope:—

Bull & Sons	£9,900 0 0
Wheeler, Brothers	9,752 0 0
Adamson & Sons	9,200 0 0
Parmenter	9,087 0 0
Aviss & Co.	8,970 0 0
Gibbs & Flew	8,900 0 0
Dove, Brothers	8,875 0 0
Goddard & Sons	7,980 0 0

For building four shops in Romford-road, Stratford, for Mr. Telfer. Quantities not supplied. Mr. A. Ashbridge, architect:—

		Extra for Bath Stone Dressings to Windows.
Cocks	£2,765	£100
Thorpe	2,525	20
Palmer	2,500	40
Hosking	2,399	24
Goodman	2,145	—

For sewerage outfall works, for the Shildon and East Huckley Local Board. Mr. J. S. Crages, engineer:—

Nelson & Co.	£13,185 0 0
Davison & Son	11,139 13 1½
McKiernan	10,595 0 0
Lindsay	10,080 12 10
Carrick	9,998 16 7
Kennerday	9,697 7 10
Ingles	9,480 0 0
Munro	8,691 13 4
Ridley	8,610 0 4
Waddle	8,248 7 6
Langton	7,580 1 1
Hall	7,309 7 2½
Siddle*	6,948 6 7½

* Accepted, subject to a revision.

For alterations to 98, Tottenham Court-road, for Mr. Bowen. Mr. George Edwards, architect:—

Titmas	£397 0 0
Cullum	388 0 0
Stephenson	385 0 0
Stimpson & Co. (accepted)	314 0 0

For alterations to 32 and 33, Western-road, Brighton, for Mr. Schofield. Mr. George Edwards, architect:—

Garrett	£319 0 0
Barnes	309 0 0
Wright (accepted)	303 0 0

For alterations, &c., to the Vicar of Wakefield, Bethnal Green, for Mr. F. Garner. Mr. C. Dunch, architect. Quantities supplied by Mr. J. F. Wesley:—

Kiddle & Son	£955 0 0
Taylor & Parfitt	919 0 0
Bowden	894 0 0
Marr	844 0 0
Palmer	775 0 0

For the chancel of St. Joseph's Church, Brighton:—

Rayne	£2,265 0 0
Colls	2,223 0 0
Sheffield & Prebble	2,173 0 0
Perry & Co.	2,150 0 0
Braid & Co.	2073 0 0
Gregor	1,979 0 0
Patman & Fotheringham	1,918 0 0

For alterations and additions to shops and premises, No. 295, Edgware-road, for Messrs. Farmer & Son. Mr. Walter Graves, architect. Quantities by Mr. Walter Barnett:—

Saunders	£717 0 0
Toms	645 0 0
Garrod	633 0 0
Bolding	629 0 0
Mark	612 0 0
Phillipson	594 0 0
Mann	578 0 0

For roads and sewers at Thornton Heath, Surrey. Mr. E. Durant Cecil, surveyor. Quantities supplied:—

Walls	£3,737 7 6
Killingback	2,514 0 0
Nobbs & Co.	2,400 0 0
Brooker	2,240 0 0
Pizzey	2,176 0 0
Lake	2,040 13 6
Jesse Jackson	1,999 0 0
Rigby	1,984 0 0
Clarke	1,945 0 0
Harris	1,941 0 0
Thompson & Covington	1,935 0 0
Iles	1,927 0 0
Bloomfield	1,895 0 0
John Jackson	1,850 0 0
Knight (accepted)	1,679 0 0

For new house and buildings at Upper Culham Farm, Henley-on-Thames, for Mr. Henry Micklem. Messrs. Sedgwick, Son, & Weall, architects. Quantities by Mr. T. Nixon:—

G. & J. Waterman	£2,997 0 0
Weyman	2,502 18 9
Clements	2,382 0 0
Lovell	2,359 0 0
Clifford & Gough	2,294 0 0
Turner (accepted)	2,288 0 0
Andrews & Sons (too late)	2,510 10 0

For repairs, alterations, and additions at Rutland Lodge, Watford, for Mr. T. Bowker. Messrs. Sedgwick, Son, & Weall, architects:—

Neal	£743 11 6
Godwin	620 0 0
Chadwick	581 0 0
G. & J. Waterman	580 0 0
Clifford & Gough	559 0 0
Andrews & Sons	548 0 0
Turner (accepted)	536 17 6

For new sheds, fencing, &c., at Wilkin's Farm, Ruislip, for the trustees of the late Mr. G. E. A. Hilliard. Messrs. Sedgwick, Son, & Weall, architects:—

Brown (accepted)	£405 0 0

For new schools at New market-terrace, Camden-town, in the Marylebone Division, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Mr. C. W. Brooks:—

Boyce	£5,789 0 0
Grover	5,682 0 0
Brass	5,623 0 0
Lawrance	5,600 0 0
Hook & Oldrey	5,575 0 0
Pritchard	5,555 0 0
Sargeant	5,495 0 0
Nightingale	5,491 0 0
Higgs & Hill	5,474 0 0
Wall, Bros.	5,436 0 0

For new schools and offices at Peter-street, Soho, in the Westminster Division, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Mr. C. W. Brooks:—

Tyerman	£11,330 0 0
Atherton & Latta	10,920 0 0
Higgs & Hill	10,789 0 0
Grover	10,748 0 0
Brass	10,611 0 0
Cox	10,436 0 0
Tongue	10,359 0 0
Hook & Oldrey	10,290 0 0
Wall, Bros.	10,220 0 0

For alterations and additions to schools and offices at Vauxhall-street, Lambeth, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Mr. W. H. Barber:—

Grover	£6,765 0 0
Thompson	6,745 0 0
Marsland	6,740 0 0
Williams & Son	6,720 0 0
Jerrard	6,666 0 0
Tyerman	6,618 0 0
Pritchard	6,615 0 0
Downs	6,553 0 0
Lawrance	6,531 0 0
Wall, Brothers	6,476 0 0
Nightingale	6,343 0 0
Higgs & Hill	6,194 0 0
Hook & Oldrey	6,169 0 0

For new tramway stables, Newcastle-on-Tyne, for the lessees of the tramways. Mr. Edward Shewbrooks, architect. Quantities by the architect:—

Contract No. 2.—Car-Sheds, Provender Stores, Loose Boxes, Engine-House, &c.

Harbottle	£2,610 5 6
Mattison & Son	2,577 5 6
Harrison	2,535 1 5
T. & R. Lamb	2,487 6 0
Kennedy & Son	2,415 18 0
Whichello	2,430 0 0
Maughan	2,423 0 0
Elliot	2,320 0 0
Millar	2,276 0 0
Simpson	2,270 4 6
Leighton	2,260 0 0
Grisdale	2,218 0 0
Inglis	2,250 0 0
Atkinson (accepted)	2,220 0 0
Lunn	2,178 17 10

For new roads and sewers on the Sulhamstead Park Estate, Turnham Green, for Mr. F. Snelling. Mr. Charles J. Bentley, surveyor:—

Warner & Vickery	£3,167 18 0
Mowlem & Co.	1,643 0 0
Blackmore	1,587 0 0
Nowell & Robson	1,539 0 0
Hampton	1,395 0 0
J. Neal	1,370 0 0
R. & G. Neal (accepted)	1,2 0 0 0

For two houses and shops for Mr. Upperton, Queen's crescent, Kentish Town. Mr. J. Groom, architect:—

Harper	£1,469 0 0
Mattock, Bros.	1,237 0 0
Grimwood & Sons	1,193 0 0
Simpson	1,190 0 0
Drew (accepted)	1,150 0 0

For alterations and additions to the Deaf and Dumb Asylum, Margate. Messrs. I'Anson & Son, architects. Quantities by Messrs. Franklin & Andrews:—

Wilson	£11,848 0 0
Colls & Son	11,460 0 0
Denne	11,340 0 0
Shaw	11,300 0 0
Lawrence	11,251 0 0
Rider & Son	11,138 0 0
Ashby, Brothers	10,993 0 0
Shrubsole	10,899 0 0
Brass	10,737 0 0
Paramor & Son	10,646 0 0
Adcock	10,616 0 0
Fish (accepted)	10,320 0 0

For the erection of a market-hall, &c., for the Corporation of Over Darwen, Lancashire. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove:—

Contract No. 1.—Foundation Walls.

Holme & King	£6,920 0 0
Brudduck & Matthews	5,897 0 0
Nowall	5,135 0 0
Holdsworth	5,055 0 0
Lloyd & Milward	4,995 0 0
Smith & Co.	4,928 0 0
Warburton	4,854 0 0
Clegg	4,850 0 0
Orrell & Sons (accepted)	4,780 0 0

Contract No. 2.—Ironwork to Basement.

Tank & Boiler Co., Wolverhampton	£3,294 0 0!
Walker	2,325 0 0
Fleet	2,323 0 0
Cochrane & Co.	2,297 0 0
Williams	2,084 0 0
Shorrock	2,063 0 0
Walker, Brothers	2,050 0 0
Milburn & Co.	2,015 0 0
Woodhall	1,966 0 0
Allen	1,936 0 0
Howarth	1,900 0 0
Goddard & Walker	1,895 0 0
Wood	1,880 0 0
Pioneer Company, Accrington	1,865 0 0
Fletcher	1,859 0 0
Rushforth & Thornton	1,825 0 0
Haley	1,813 0 0
Hopkin, Gilkes, & Co.	1,787 0 0
Bellhouse	1,770 0 0
Ashmore & White	1,727 0 0
Bagshaw & Sons	1,700 0 0
Handyside & Co. (accepted)	1,717 0 0!

For re-flooring and re-seating the ancient Parish Church of New Shoreham, Sussex. Mr. Arthur Loader, architect:—

	In Oak.	In Pitch Pine.
Lockyer	£1,712	£1,505
Cheeseman & Co.	1,560	1,300
Hammer	1,537	1,097
Hide	1,518	1,153
Snewin	1,516	1,190
Card & Son	1,445	1,165
Chappell	1,445	1,018
Stow	1,350	1,080
Patching & Son	1,310	1,030
J. D. Snewin	1,300	937
Barnes	1,295	999
Longley	1,280	945
Burton	1,275	945
Pink	1,179	902

For restoring, altering, and re-seating the ancient Parish Church of West Dean, Chichester, Sussex. Mr. Arthur Loader, architect:—

Mr. R. C. Blaker accepted in limited competition.

For building five cottages at Hounslow, for Messrs. G. & W. Hayes:—

Wills	£1,166 0 0
Gamage	828 0 0
Daniels	745 0 0

For building cabinet works at Mount Radford, Exeter, for Messrs. Warren, Brothers. Mr. Charles Finn, architect. Quantities supplied:—

	Original Tender.	Revised Tender.
Harris	£2,477 11 0	£2,307 11 0
Mears & Son	2,350 0 0	—
Scadding	2,289 0 0	2,199 0 0
Berry	2,230 0 0	2,230 0 0
Hill & Son*	2,230 0 0	2,180 0 0
Commings	2,000 0 0	—

* Accepted.

For new Sessions Court and alterations to the present Assembly Room, Chichester. Messrs. Jeffery & Skiller, architects:—

	Main Building.	New Stairs, &c., to Present Building.
Johnson	£2,700 0 0	£150 0 0
Fielder	2,439 0 0	145 0 0
Smith	2,278 0 0	126 0 0
Beale	2,192 0 0	107 0 0
Smart	2,033 0 0	116 0 0
Clark	1,907 16 0	111 15 0

For erecting two shops and dwelling-houses in the Belgrave-road, St. John's Wood, for Mr. W. C. Turner. Mr. G. Low, architect. Messrs. Johnstone & Paine, surveyors:—

Dove, Brothers	£2,595 0 0
Isaacs	2,580 0 0
Conder	2,436 0 0
Gould & Brand	2,275 0 0
Langmead & Way	2,240 0 0
Holliday	2,195 0 0

For the erection of a villa residence at West Brighton. Mr. A. H. Kersey, architect. Quantities by Mr. Henry Lovegrove:—

Cresswell	£2,449 0 0
Oliver	2,250 0 0
Cheeseman	2,090 0 0
Barnes	2,047 0 0
Parsons & Sons	1,993 0 0
Nurcombe	1,799 0 0
Ockenden	1,450 0 0

For alterations and additions to the Jewish Home, Stepney-green, London. Messrs. Davis & Emanuel, architects. Quantities supplied by Mr. H. P. Foster:—

Brass	£1,192 0 0
Ryder & Son	1,160 0 0
Grover	1,117 0 0
Williams & Son	1,073 0 0
Cox	1,069 0 0
F. & F. J. Wood	1,028 0 0

TO CORRESPONDENTS.

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